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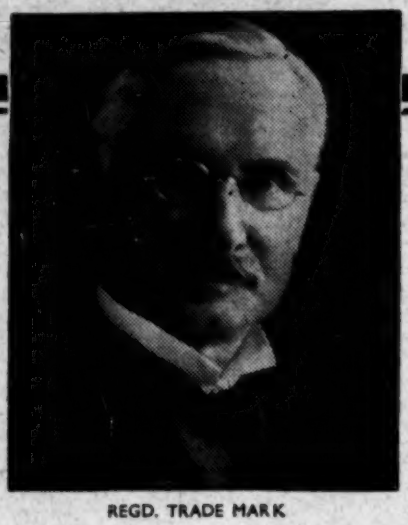

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 13 1941

A SURVEY OF ONE HUNDRED CASES OF WAR NEUROSES*

BY

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In this report some observations are presented on the previous history, treatment, and results of treatment of 100 men admitted to an E.M.S. hospital suffering from psychoneurotic states occurring during or after exposure to combatant action. No commissioned officers are included in the group.

A number of workers in this field have been interested in the type of person who develops a psychoneurosis under the strain of active service. Besides having important implications regarding the prognosis and treatment of these cases, a study of the prominent features previous to breakdown is of the utmost value in the detection of possible psychoneurotics. Though as yet no scheme has emerged, their detection by some form of psychiatric examination at the time of recruitment has engaged the attention of many psychiatrists, and our survey has led us to make some suggestions towards this end. There is little doubt that the psychoneurotic can be valuable in military service as in other spheres, yet often his greater liability to panic is a constant menace to the morale of any fighting unit. More than one of our patients was acutely distressed by his effect on other men. We would not for a moment suggest that all psychoneurotics should be eliminated from the Forces, but when a strong predisposition to nervous breakdown is detected it would appear that the type of service into which the individual is to be sent should receive proper consideration.

Since the present war began sharply divergent views have been expressed on the methods of treatment of these illnesses and different results quoted. These variations appear to be due largely to the orientation of the particular workers, according to whether the symptom, or the dynamic disturbance in the personality underlying the production of the symptom, was the focus of interest—i.e., whether a short-term or a long-term policy was adopted. Which of these approaches is the more useful is a question on which our observations leave us in no doubt. The "*war neuroses*" are essentially the *neuroses in war*, and in my opinion the treatment and disposal of these cases can be based only on this fundamental standpoint.

Nature of the Group

It should be noted at the outset that the cases here considered must be regarded as the more serious instances of this type of illness. Most of these patients had been in other hospitals before coming under our care; on the average each man had been two weeks in hospital, followed by one week of sick leave. Thus the selective nature of the group precludes conclusions about the incidence of certain factors in general.

Ranks.—The distribution in ranks was as follows:—

P. sgt.-major	1	Corporals	4
C.Q.M.S.	1	L/corporals	7
Staff sergeant	1	Other ranks	77
Sergeants	9		

This represents a proportion of 23% N.C.O.s—roughly the proportion of N.C.O.s to other ranks in the Army as a whole. (It would be unwise to stress statistical observations based on such a small number of cases; therefore many of the following remarks should be considered with this limitation in mind.)

The preponderance of sergeants is probably connected with many factors besides possibly greater strain. (This preponderance has been found to exist in a subsequent group of similar cases.) Their greater average age (36 years) and the fact that some were given this rank because of their technical experience rather than any special personal qualities would doubtless be contributory factors.

Age and Family Connexions.—The average age of the whole group was 29 years 10 months, the age distribution being:

20-24	38	40-44	3
25-29	21	45-49	4
30-34	15	50-54	2
35-39	17		

Fifty-eight men were married, 39 of these having children.

Motives for joining Army, and Attitude to Service.—The recruitment categories form an approach to the question of motives in joining, and of the attitude to, the Services. These were:

Regular Army	14	Territorials	31
Regular Reserve	12	Volunteers	25
Supplementary Reserve	6	Conscripts	12

Perhaps the most striking feature is the low incidence of conscripts. It might be expected that conscripts would form a high proportion of breakdowns as compared with volunteers, though there are, of course, factors opposing such a tendency. For example, age might offset breakdown, as the younger men are not so likely to be harassed by family ties, etc., and are correspondingly readier to respond emotionally with the "joy of battle." Again, the most common type of neurosis occurring in the younger conscripts may yield more readily to treatment, so that only the more serious cases reach us. Certainly a third of the conscripts felt definitely unhappy from the start of their service, and would not have volunteered; 6 of them had a bad early history.

Of the 14 soldiers of the Regular Army 5 had joined up impulsively to escape an unhappy situation. They

* A paper read to the Scottish Branch of the British Psychological Society on May 24, 1941.

regretted the step afterwards, and looked forward to the time when they would be freed from what they felt to be an irksome bondage. The Territorial and volunteer groups included a good proportion of highly conscientious men impelled to serve by a strong sense of duty despite their anxious tendencies. A few of the Territorials nevertheless showed unsatisfactory motives—e.g., to avoid conscription, to get social outlets, enlisting under what was felt to be pressure from employers or to ensure being in non-combatant service. The majority of this group had had some years of service, the median period being four years, and it is of interest that the 7 men who joined in the year preceding the outbreak of war had very bad histories of psychoneurotic symptoms. Their enlistment was more in the nature of an attempt to deal with rising anxieties than of mature consideration about duty. Among the volunteers also were several men whose enlistment was occasioned by unpropitious elements. Thus 10 joined primarily to get more money than the unemployment allowance. Two joined impulsively for no very good conscious reason, while another pair volunteered for non-combatant service. There were 7 who joined for special engineering work: these men, who were older than the others, did not expect to be engaged in battle. One man's reason for enlisting was to avoid arrest.

Altogether 37 men joined the Services with an inadequate attitude and were thus under a strain from the start. They showed poor appreciation of their roles in a time of national danger, and were subsequently too much concerned with their personal problems for the larger issues to govern their conduct. The situation of those men who, aware of their psychological limitations, volunteered for specialized work and later became involved in combatant action was an unfortunate one. The Supplementary Reservists suffered in this fashion. Mostly older men, they enrolled willingly for specialized branches, but found the unexpected strain of battle too heavy. Evidently the ease with which this situation may nowadays arise would make advisable a psychiatric scrutiny of such men before detailing them for service abroad.

Physical Condition.—Practically none of the group had any signs of systemic disease. Three with positive Wassermann reactions were found, one being suspected clinically and the others discovered in routine testing. On the average, physique was good, only 6 men being of poor development. Two of the latter were thought to be possible cases of pulmonary tuberculosis, but radiological examination was negative.

Intelligence.—Owing to pressure of time it was not possible to measure intelligence satisfactorily. Twenty men reported having been backward at school, and probably most of these were borderline defectives. When the matrix test (Raven, 1939) was given to 45 unselected cases in the group a mean mental age of 12 years was obtained. On later admissions of this type the Herring revision of the Binet-Simon tests gave an average mental age of almost 14 years.

Previous History and Prediction

Eighty of the hundred cases admitted having traits indicating previous emotional instability. They could be divided into the following groups:

Group 1.—In this group were 36 men who had a disturbance amounting to a definite and easily recognizable psychoneurotic condition before joining the Army, so that the state which developed after traumatic experience was merely an aggravation of one already well established. Included in this group are those men who had had previous episodic illnesses—e.g., previous spells of depression or transient hysterical symptoms. It is safe to say that none of this group should have been exposed to combatant action, so great was the likelihood of breakdown in view of their previous history, and at best only a small proportion should have been admitted to any kind of service with the Forces.

Group 2.—This group comprised 33 men with a character formation pointing to a latent psychoneurotic condition or with a degree of temperamental instability, though without gross symptoms. It contained the over-anxious and over-conscientious types, the poorly adapted socially, and a number of weak personalities who had never made much of a success in any occupation. It is more difficult to forecast the behaviour of men of this type under strain. Most of them were capable of service of some kind, and probably a fair proportion would have remained well enough in home service.

Group 3.—This consisted of 11 men whose only striking characteristic was that they had always been restless. They frequently changed their jobs, yet worked with fair efficiency so that they were seldom unemployed. They, for the most part, were good soldiers until they broke down (there were a few regular soldiers among them), but showed temperamental instability with a marked lack of doggedness.

Group 4.—This comprised 20 men whose previous history was good and whose breakdown would not have been expected. There was a definite tendency for them to fall into two subgroups of different age levels, the first consisting of men over 35 who found the pace of events rather fast, and the second of men under 25, in whom breakdown was mostly of a milder character.

A list of some of the specific symptoms and their frequency provides an instructive approach to the kind of factor to be inquired into in any brief psychiatric examination such as might be made by medical officers as a preliminary filter for the separation of these cases.

Previous Symptoms and Traits

Anxious over being aggressive	54	Previous hysterical symptoms or fits	8
"Nervousness"	41	Domestic strife or worry	7
Frequent change of type of work	27	Nail-biting	7
Phobias	24	Frequent blushing	4
Anxiety dreams and nightmares	17	Stammering	4
Shyness	17	Stealing and persistent truancy from school	3
Solitariness	13	Tics	3
Mild depressive spells	12	Previous serious accidents	5
Anxiety attacks	11	Previous serious accidents followed by emotional disturbance	4
Avoidance of females	9		
Enuresis	8		

Because a certain degree of rapport is usually necessary to elicit a full symptom-picture in the psychoneurotic, examination of all men by psychiatrists is not at present feasible because of the time it would take. Nevertheless it seems to me that a useful and practicable psychiatric selection could be made in the first place by referring to the psychiatrist those patients who admit or show general "nervousness" at initial medical examinations. More often than not the anxiety manifestations in these cases during routine medical examination would make the admission unnecessary. (From experience of many other patients in this hospital who were not exposed to combatant action a useful selection could have been made in this way. As would be expected, the previous history is even more striking in these cases.) Whenever specific symptoms were found the men could be referred to the psychiatrist for fuller investigation and opinion.

Family History.—Information about nervousness in their families was obtained from the men themselves, and is thus apt to be inaccurate. However, from a description of specific behaviour in the relatives mentioned it could usually be decided whether or not the individual was abnormal enough to be recorded as such. Fifty-three men reported the presence of emotional instability either in parents or in siblings, as follows:

Both parents nervous	8	Mother nervous	16
Father nervous	17	Siblings nervous	12

In 15 of the cases with parental abnormality there was also instability in a sibling. Doubtless family history in the

psychoneuroses is of uncertain value unless information from other sources is obtained. Moreover, its significance lies in its association with the previous history of the individual rather than in an independent contribution. The importance of abnormal early environment is illustrated by these facts. In 16 homes there was serious drunkenness or parental strife, while 6 patients acquired a step-parent in early childhood, and 3 were "only children." Nine men lost their fathers by enemy action in the last war, 6 of this group admitting no specific nervous symptoms in their previous histories. Another man was illegitimate and was brought up in trying circumstances.

Precipitating Factor and Onset of Symptoms

As is well known, early in the last war the strongly materialistic standpoint of general medicine inclined to the view that the war neuroses arose from some form of *commotio cerebri*, a view gradually abandoned under the persistent barrage of facts. With our patients it was difficult to ascertain the extent of shock or whether concussion had been present or not. Many reported amnesia for varying periods, but the comparatively easy recovery of memory made it almost certain that there had been no true concussion. Further, most of these patients with amnesia recalled clearly the particular stimulus causing the loss of memory—i.e., they showed no retrograde amnesia, as would be expected in true concussion. There was 1 case of cranial injury and only 3 cases of apparently true concussion so far as previous reports show. Seventeen men had been subjected to physical violence by blast, though few of these lost consciousness. Ten others were wounded in the body—wounds mostly of a superficial character; and in those cases in which deeper structures were involved healing was rapid. Bombing of ships, with immersion in the sea, was the traumatic experience in 7 cases. For several men the critical experience was the loss of friends severely wounded beside them, while others were especially upset by the harrowing scenes of women and children being machine-gunned and bombed.

The onset of symptoms in most cases occurred during battle, though a quarter of the patients developed marked symptoms after return to this country. For the most part these latter were men who had had mild anxiety symptoms for a period, the depression which supervened being the cause of their reporting sick. A few conversion symptoms, however, also appeared after a latent period.

The majority admitted readily that their illness began as the climax to a rising feeling of fear and strain under the process of battle. With the increase of their anxiety they often became more and more afraid of loss of control, until finally some special circumstance brought about disintegration. The fundamental factors in the breakdown were the subjective significance of the trauma plus the particular psychological make-up of the individual. Thus different traumata evoked similar states, and, conversely, the same trauma gave rise to different disturbances—e.g., a conversion hysteria or a depression. As would be expected, where the predisposition seemed less marked the traumatic experience was more severe, and vice versa, an illustration of this inverse relation being given by these figures:

Traumatic Experience	30 Cases of Bad Previous History	30 Cases of Better Previous History
Fear and strain	18	6
Blast	4	11
Wounded	2	6
Death of friends	2	3
Aerial attack on ship	4	4

Symptomatology

It has to be borne in mind that the cases described were not investigated until, on the average, several weeks after the start of the illness. Anxiety manifestations were by far the commonest complaints, the symptoms in order of frequency being:

Feelings of anxiety with trembling and jumpiness	66	Panic attacks	15
Sleeplessness	47	Suicidal:	
Headache	43	Actively	5
Unsociability	37	Passively	7
Anxiety dreams	35	Hysterical conversions:	
Depression	33	Leg	16
Irritability	30	Arm	2
Preoccupation	27	Visual	6
Amnesia for whole or part of traumatic experience	25	Auditory	3
Giddiness	23	Tics	4
Effort syndrome	21	Voice	3
Spontaneous emotional outbursts	19	Stuttering	6
		Enuresis	3

There were three main groups—the anxious, the depressed, and the hysterical. Much overlap existed, yet the dominant affective disturbance usually made it possible to place a man in one of these classes. Typically, the anxiety cases showed tremors and jumpiness, especially to noises, disturbed sleep, and anxiety dreams involving war imagery. They also had frequent headaches, restlessness, and occasional giddiness. By the time the men reached this hospital the exhaustion described by many writers in the early stages of war neuroses must have been overcome.

We have included the effort syndrome group in the anxiety neuroses, as without exception they showed anxiety symptoms at some stage. In a few cases it was interesting to watch the development of effort syndrome accompanied by a corresponding diminution in the experience of anxiety—a process which could be likened to the development of a conversion symptom. Panic attacks occurred in about a quarter of the anxiety cases, usually precipitated by a passing aeroplane, train, or motor-car. Less common in this group were gastro-intestinal disturbances, 2 patients having diarrhoea and 3 vomiting and gastric pain. The 3 with positive Wassermann reactions were found in the anxiety group, but the psychological picture of these men differed in no way from that of the other cases.

As mentioned, the groups were not clearly demarcated. Thus many of the anxiety group had conversion symptoms, and 20 of them showed a well-marked depressive trend. Depression was the dominant feature in 13 men. These cases did not show the characteristic depression of melancholia, though in 2 of them a typical psychotic depressive picture with self-reproach eventually developed. The common depression appeared to be chiefly a state of futility and a withdrawal of interest from the outside world, with a consequent irritability towards its incursions. Five of the depressed cases were suicidal. Suicidal impulses, however, were not confined to the depressives, as some of the men with anxiety states reported transient suicidal impulses, mainly of a passive character, shortly after the onset of the illness. Several of those showing depression stated that if forced to return to battle they would rather commit suicide than experience again what they had undergone. The depressed group showed to a conspicuous degree the importance of constitutional and hereditary factors. Before a review of the group as a whole was made my colleagues and I were given the impression that the depressed patients tended to be the older men, especially those with families. In fact, the age and the proportion of married men with children in this group were almost identical with those in the group as a whole. There was a previous history of pronounced emotional disturb-

ance, however, in 90% of this group, and a positive family history was reported in 70%.

Hysterical manifestations occurred for the most part in the leg (16 cases). Of 4 men with tics 3 had had the symptom in earlier years. The cases designated hysteria were those in which "conversion" of the affective disturbance to a somatic disorder was superficially complete—i.e., they exhibited the paralysed function but denied any emotional upset. Their attitude typically was: "If only my leg were right I would be quite fit."

Although all patients were sent as psychoneurotics, it was found that a few were psychotic. Two proved to be hallucinating schizophrenics, while 2 depressed cases eventually revealed a typical melancholia. A few other depressed patients became so strongly suicidal that removal to a hospital for psychotics had to be recommended despite the fact that a true melancholia was not present. Mixed reactions occasionally made classification a matter of doubt, especially in the anxious-depressed cases, and since 7 of the depressed group had a history of recurrent attacks of depression they were more accurately labelled "cyclothymic."

A consideration of the total personality would have led to a different label being given to many of the cases. The long-standing histories of maladaptation, the emotional detachment of many to the revival of traumatic experiences (even after administration of intravenous anaesthetics such as pentothal or cyclonal), and, above all, the extent to which their emotional integration depended on their proximity to wives and mothers, would have made "psychopathic personality," in particular the schizoid type, more accurately descriptive of a large proportion of the cases. Exemplifying the underlying psychopathic trend in many were frequent breaches of regulations. To anyone accustomed to the over-conscientious conduct of anxiety neurotics in peacetime, the difference in behaviour of these men was most striking even when allowance was made for the compulsive character of many of the misdemeanours.

The following list shows the distribution in the symptom groups.

Anxiety neurosis	42	Psychopathic personality (temperamental instability)	8
Anxiety neurosis with hysterical conversions ..	20	Schizophrenia	2
Conversion hysteria	14	Traumatic diathesis after cranial injury	1
Depression and cyclothymia	13		

Intelligence, as tested in a proportion of the whole group, was of the same level in the different symptomatic groups except in the case of the conversion hysterics, whose average intelligence was about two years lower than that of the other groups.

Treatment

There is no doubt that many of the unfortunate disputes over the treatment of war neuroses have arisen from the publication of so-called "cures" without adequate follow-up data. As every psychotherapist knows, certain psychoneurotic symptoms can be removed rapidly by a wide variety of methods, but the rapidity of removal by so-called "simple" procedures would appear to be closely correlated with liability to recurrence of the same or other disturbances. For example, the men with conversion hysteria had their symptoms alleviated by persuasion, suggestion, and, in a few uncooperative or unresponsive cases, by one or two cardiazol convulsions. But when the question of returning to units arose many of these symptoms developed afresh. Few of our anxiety cases showed any improvement with such "simple" procedures, even when these were combined with sedation. (It must be mentioned again that most of our cases had already resisted "simple" treatment.) Abreaction was essential with most of the anxious patients. Often the reluctance of the patient to revive his nightmarish experiences was overcome by very slight emotional release, which produced far better results on sleeplessness than did sedatives. Sometimes the traumatic experience was scarcely verbalized, yet when brought to the threshold of articulation sufficient affective discharge appeared to take place (e.g., through all the bodily expressions of acute anxiety) for an appreciable improvement to be felt. Intravenous anaesthetics were most useful where amnesic gaps could not be filled in unaided. Nevertheless the end-product of abreactive treatment was for the most part a highly anxious individual. Usually a diffusely anxious state became canalized into phobias of certain situations, mostly connected with the noise of aircraft or explosions, with a feeling of comparative ease between the phobic experiences. Where the residual phobic anxiety was too disturbing more radical treatment, involving deeper childhood anxieties, had usually to be undertaken. Twenty-five of the cases required treatment of this more extensive character, lasting two to three months, in order to secure enough freedom from symptoms for discharge from hospital.

The depressed group tended to recover under reassurance and sedatives, and in a few slower cases one or two convulsions led to improvement.

Psychopathology

As contrasted with suggestion and reassurance, any form of analytic treatment, however slight, gives some degree of insight into the aetiology of the illness. Obviously, on account of time requirements, no case could be treated along orthodox psycho-analytic lines, so that the psychopathological factors studied tended to be those at superficial levels.

At a conscious level the common disturbing factors were fear of death and an impotent rage against what were felt to be overwhelming odds. This rage was often excited to a paralysing degree by the slaughter of women and children or by the loss of friends. On those men whose fathers had died in the last war the fear of death probably had a more profound effect. It could also be said to involve deep levels in all the cases—as though it derived from a childhood fear of attack by fantastically powerful "bogymen." The feeling of helplessness in face of danger was made more acute by the insecurity arising from the peculiar features of mechanized warfare.

The outstanding feature of the deeper psychology appeared to be a basically insecure attitude towards the outside world. This attitude was manifested in many ways, particularly in the excessive dependence upon those figures with whom security was felt—namely, their families. It was as though these men had always unconsciously dreaded the assertion of their independence as a dangerous aggressive process. To attempt it was to incur the wrath of parents, whose vengeful attitude was a magnified image of their own feelings. Rather than risk this talionic vengeance they appeared unconsciously to adopt a role of bondage to them, so that the devotion was as much a deep compulsion as a virtue. Their dependence was made conspicuous by repeated requests to be allowed to return home, usually with the explanation that a short spell there would make a great improvement despite the fact that most of them had already had sick leave. After air raids on their home areas the compulsive nature of these wishes could sometimes be pointed out successfully—e.g., when the men admitted that at home they would be far more anxious than their relatives. In the depressed cases there seemed to be a doubt even of this security with families, the result being that these men acted as though compelled to isolate themselves. They were often unable to write

home, or if they went home they were unsociable and irritable; a few lost all sexual desire in this phase.

There can be no minimizing the importance of this separation anxiety, which in our opinion is a psychopathological factor probably not enough appreciated in general on account of its being concealed in cases undergoing psychotherapy in peacetime—that is, amidst their emotional props. Moreover, it is almost certainly one of the greatest factors governing the pronounced negative therapeutic reaction of these cases compared with the neuroses of peacetime. It was the rule to have treatment accepted gratefully, with relief of symptoms, until the threat of continuing the separation by a return to duty became a menace to the patient. Then the desire to leave the Service became explicit. It could not be said, however, that malingering entered into this attitude, which was based on the powerful dread of isolation from love and security. Interpretation of this situation usually improved the symptom-picture up to a point, but to change the underlying weakness of the dependent ego was too great a task for any short period of treatment, even in favourable cases.

In those men with recurrent anxiety dreams the infantile character of the anxiety was often perceptible. For instance, though modelled on battle scenes, the dreams might be located near their childhood homes, or the manner in which the individual was the unique object of persecution by the enemy suggested childhood nightmares in which the ogre or witch was replaced by the aeroplane. Where one outstanding incident had occurred, such as shipwreck, the dream was usually a more persistent repetition of the trauma; yet soon after abreactive treatment began, perhaps with superficial explanations, there was a tendency for infantile dreads to become more transparent.

As already mentioned, the depressed cases showed a state of resignation and withdrawal plus a sense of futility rather than a feeling of loss or sadness; and they revealed a greater incidence of predisposing signs and family instability.

The factors determining the choice of illness form too large a problem for discussion here. It might be noted, however, that in the conversion hysterics there was a lower average intelligence, while wounds and blast as traumatic experiences were slightly more common. (Because of the small numbers this difference was of uncertain significance.) A general feature of the hysterical group was a strong latent feminine trend; and, indeed, deep identification with family figures, especially parents, could be discerned in several cases throughout the series—for example, in the assumption of symptoms from which a parent at one time suffered.

Results

Before describing the results of treatment some general considerations will not be out of place. If therapy aims merely at getting the patient into approximately his state before breakdown a fair percentage of "cures" might be obtained. But with simple suggestive or sedative treatment the patient is left as prone to further breakdown as before. On the other hand, with any form of analytic treatment (including abreaction) it is assumed that some lessening of the tendency to subsequent breakdown should result. Our experience has been that the treatment of patients with a view to elucidating causal factors, even when the symptom-disturbance appeared slight, showed in the large majority of cases that the personalities were structurally so weak and unstable that return to further combatant service was quite out of the question. It is possible that the circumstances in which treatment was carried out might have had a bearing on the adoption of this view. All our patients had been far removed from the neighbourhood of battle, with a consequent heightening of the dread of return. In the last war treatment in France, with continuity of the military atmosphere and the absence of such a retreat, perhaps enabled a larger fraction of patients to return to duty. It is far more likely, however, that the greater understanding and knowledge of the psychoneuroses to-day would not have agreed with such a course, as, indeed, actual results proved by 1918.

On account of the low percentage of cures the question arises: what is the value of psychotherapeutic units in war? The answer to this may be given by referring to analogous problems in other fields of medicine. For instance, what percentage of dyspeptics, cardiac weaknesses, or a host of other conditions are "cured"? Such patients are admitted to hospital for observation and investigation followed by a "treatment" which enables them to maintain a prescribed regime. The function of psychotherapy is in many respects similar. Certain personality weaknesses are akin to many organic conditions in that they cannot be radically altered (except perhaps by a lengthy treatment of unwarrantable cost). The patient is brought to hospital in an acute state because he has been subjected to a strain beyond the limits of his emotional integration. He needs help, if only to recover his former adaptations, and in the course of treatment the environment with which he may be expected to cope successfully may be ascertained. The enormous number of pensions for war neuroses following the last war shows that mere discharge to civil life is not sufficient. Nor, in our opinion, is treatment in hospitals enough. Men have usually to be discharged to their homes when the severity of their symptoms is so reduced that they will not further tolerate the inevitable restrictions of hospital life. Sometimes symptoms are still disturbing, and it is desirable that provision for subsequent psychotherapeutic help, say in out-patient clinics, should be made to aid these men towards successful adjustment. Such help, of course, could only be an accessory in the task of placing these cases in a useful role in society—a task essentially socio-psychological.

The average period in hospital for sufficient improvement to lead to discharge was about seven weeks. By this time, in our series, 15 men were much improved, 65 improved, and 20 little changed (the last group included transfers to other hospitals).

The eventual disposal, of course, is a separate problem from the treatment of symptoms, for previous history has to be strongly emphasized when deciding the question of return to service. For example, depressed patients mostly made a complete symptomatic recovery; but where there was a history of recurrent attacks at intervals of less than a year, or where the degree of depression had been suicidal, discharge from service was recommended. Discharge from service was also advised for anxiety cases with bad histories, for gastric cases, and for most cases of effort syndrome. Strong dependence on the family was also taken as a bad prognostic sign, since Army conditions do not permit of men being categorized so as to remain near their homes. In the hysterical group visual and massive gait disturbances were thought to warrant discharge because of the total incapacity produced by any recurrence.

Of the groups based on previous history all of Group 1 (men with previous psychoneuroses) and a large fraction of Group 2 (men with character disturbances or latent psychoneurotic conditions) were discharged. In Group 3 (men with previous temperamental instability) just over one-half were returned to service, though, according to follow-up reports, not with much success; three of these men returned to hospital within a few weeks. With most of this group there seemed to be a feeling that it was time for another change, and their consciences were satisfied

with having "done their bit." The older men in Group 4 (no previous history) were discharged; but most of the younger half returned to duty, many to full service.

External factors had also to be considered in disposal; for instance, though some men might have been regarded as fit for a lower grade of service, subsequent breakdown was likely if recategorization meant doing work which did not employ their talents in some useful way, or which, in an ambitious conscientious man, would interfere with promotion.

Of those men returned to a lower grade of service it was learned from follow-up inquiries that 4 were afterwards discharged from other hospitals. Follow-up replies were not obtained for all cases, but from those received about half the men were stated to be serving satisfactorily. Thirteen men were transferred to other hospitals: 7 because of psychosis or suicidal impulses, 3 for anti-syphilitic treatment, and another 3 for other treatments. It is probable that 10 of these were eventually discharged (the 7 with psychosis or suicidal impulses, plus 3 of the others) and that the remainder returned to duty in a lower category.

The final results, then, might be stated thus: 72 men were discharged from service, 19 returned to a lower grade of service, and 9 returned to full duty.

Summary

Observations on 100 men suffering from psychoneurosis following combatant service showed that 80 of them had had previous traits indicating emotional instability. The illness of 36 men was merely an aggravation of previous psychoneurosis, and in 33 it was associated with a definite predisposition to breakdown. Temperamental instability, revealed by frequent changes of job, was present in 11. Of the 20 men with no previous history one-half were much older than the rest of the group, and the disturbances in the younger half were mild.

Some observations are made on the possible selection of these cases and on their treatment and psychopathology.

When the liability to further breakdown was taken fully into account the recommendations for future disposal led to 72 of the group being discharged, 9 returned to full duty, and 19 returned to a lower grade of service.

[Since the above paper was written a new scheme has been developed whereby it will be possible to have psychoneurotic soldiers placed in work suited to them and, if necessary, near their homes. This highly commendable innovation will be followed with much interest.]

I wish to express gratitude to the Department of Health for Scotland for permission to refer to these cases; to Dr. C. D. Bruce, physician-superintendent of the hospital, and to my colleagues, for much helpful criticism; and to my wife for most of the work involved in tabulation.

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J. V. Greenebaum, W. Felson, and M. Zeligs (*J. Pediat.*, 1941, **18**, 799), who give the history of a fatal case in a female infant aged 1 year, recall that acute interstitial myocarditis is a rare form of heart disease which was first described by Fiedler in 1890. The clinical picture is one of progressive myocardial failure unassociated with the usual causes of myocardial damage. In 1929 Scott and Saphir were able to collect only 38 cases in the literature, the youngest of which was in a child aged 3 years. The diagnosis is very difficult, and according to Maslow and Lederer, writing in 1933, has never been made before death. The disease should be borne in mind in cases of prolonged tachycardia in infants and children in whom no other cause for it can be found.

FRAGARINE: AN INHIBITOR OF UTERINE ACTION

(Preliminary Communication*)

BY

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F.R.C.O.G., F.A.C.S. (Hon.)

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In certain areas of Herefordshire and Worcestershire, and probably elsewhere, it is a common practice for women to use an infusion of dried raspberry leaves to allay the pains of labour. The same "tea" is also employed empirically, with apparently satisfying clinical results, in severe cases of dysmenorrhoea. It seemed, therefore, that an investigation into the pharmacological aspects of raspberry leaves might be interesting, and in May, 1940, with this end in view I approached Mr. E. C. Bennison, chairman of the Advisory Committee of the School of Pharmacy, Birmingham. Mr. Withell, head of the School of Pharmacy, kindly undertook to prepare extracts and to isolate, if possible, any active principle that might be present. This work was started in August, 1940, and when enough material was obtained the extracts were submitted to Prof. J. H. Burn, University Department of Pharmacology, Oxford, for pharmacological trial. In March, 1941, I received from Prof. Burn the following account of his observations.

"I began by making experiments in the spinal cat, in which relaxation of the uterus is readily observed. If an infusion of raspberry leaves is made in the same way as tea, and if this infusion is concentrated by evaporation under reduced pressure, then an injection of an amount of infusion equivalent to about 2 grammes of dried leaves produces a momentary fall in the blood pressure, followed by a conspicuous rise, and simultaneously a relaxation of the uterus of the non-pregnant cat. It will be remembered that the sympathetic innervation of the uterus is inhibitor.

"This effect resembled that which is produced when a dose of nicotine is injected, which simultaneously produces a rise of blood pressure and relaxation of the uterus. The action of nicotine is known to be due to stimulation of the suprarenal gland resulting in liberation of adrenaline, and also to the stimulation of sympathetic ganglia resulting in a discharge of inhibitory impulses down the hypogastric nerves. It was found that the initial fall in blood pressure played no part in the action on the uterus, because in cats anaesthetized with chloralose no initial fall of blood pressure was observed.

"In further experiments, in which the suprarenal glands were first excluded from the circulation and in which the hypogastric nerves were cut, the injection of raspberry extract produced no relaxation, and, indeed, the effect observed was a small but well-maintained contraction.

"Further experiments were then done on the isolated uterus removed from the body and suspended in a bath. It was found that the extract produced a contraction of the uteri of both the cat and the guinea-pig, fairly prolonged in action and much more likely to represent any effect which may be observed by patients drinking raspberry tea. It is interesting to observe that the amount of extract producing an effect in the bath on the isolated organ is about 1/100 part of the dose which is taken by a patient drinking 10 oz. of a 5% infusion of dried raspberry leaves. The dose of pituitary extract which must be added to the bath to produce a similar effect is also about 1/100 part of the human dose.

"Attempts are being made to concentrate and purify the active principle responsible for the action on the isolated uterus. We do not know at present whether this principle is the same as that which produces inhibition of the uterus in the anaesthetized

* Received for publication on August 1, 1941.

cat. If one substance is responsible for both effects its properties resemble those of the alkaloid hydrastinine, which was shown by Laidlaw in 1911 to have similar effects to those we find exerted by raspberry extract.

"It remains to add that raspberry extract has no action on the isolated cat heart."

On June 14, 1941, Burn and Withell (1941) brought before the Physiological Society of Great Britain, at a meeting held in Birmingham, a more detailed account of the work so far accomplished. On that date also the first clinical observation was made in my department at the University of Birmingham.

To obtain a record of the clinical effect of "fragarine"—the name we propose for the active principle in question—the intra-uterine-bag method described by Bourne and Burn (1927) and modified by Chassar Moir was employed. It is unnecessary to describe in detail the earlier experiments, but the following records provide in our opinion adequate clinical evidence of the inhibitory action of fragarine upon the human uterus.

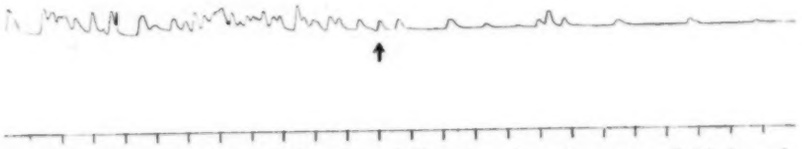

FIG. 1.—Showing the inhibitor effect of the administration of 40 grains of crude extract of dried raspberry leaves containing fragarine upon the spontaneous contractions of the human uterus on the fifth day of the puerperium. The arrow on the tracing marks administration of the extract. The divisions of the base line show intervals of one minute.

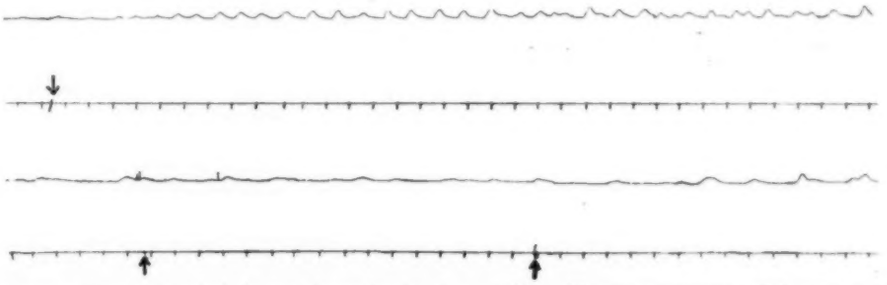

FIG. 2.—Uterine contractions after pituitrin are shown in the first tracing. The poor response of the uterus to pituitrin given after fragarine is shown in the second tracing. The arrow on the upper tracing marks administration of pituitrin 5 units. The first arrow on the lower tracing marks administration of raspberry-leaf tea 20 oz. 5%; and the second arrow, pituitrin 5 units. Divisions of the base lines show intervals of one minute.

Case Reports

Case 1.—A 1-para. Fifth day of puerperium. The uterus was anteverted and the fundus extended two inches above the symphysis pubis. The cervical canal admitted two fingers, and the intra-uterine bag was introduced without difficulty at 2.50 p.m. Spontaneous contractions of the uterus were recorded as shown in Fig. 1. The blood pressure registered 110/58 mm. At 3.15 p.m. 40 grains of raspberry extract (Ext. 49a) were administered by mouth. At 3.45 p.m. the blood pressure showed a reading of 106/58. The effect of fragarine upon the uterine contractions was to inhibit them. At first the contractions became less frequent, and finally they ceased altogether (see Fig. 1). No toxic effects of the extract were evident.

The effect of fragarine upon uterine contractions initiated by the administration of pituitary extract is shown in Case 2.

Case 2.—A 7-para. Eighth day of puerperium. Uterus involuted to size of twelve weeks' gestation and retroverted. The cervix admitted one finger, and the intra-uterine bag was inserted at 5.30 p.m. The blood pressure registered 120/70. Five units of pituitrin were administered at 5.35 p.m. At 5.45 p.m. the blood pressure was 126/72, and 20 grains of extract (49a) were administered. At 6 p.m. the blood pressure registered 112/70, and a second dose of pituitrin (5 units) was given. The effect of fragarine upon the uterine contractions was to diminish their frequency and strength and to eliminate secondary contractions. This is indicated in the lower tracing in Fig. 2.

Case 3.—An 8-para. Fifth day of puerperium. Uterus anteverted and fundus extended two inches above the symphysis pubis. The cervical canal admitted two fingers. At 3.15 p.m. the intra-uterine bag was adjusted. The blood pressure was 100/62. At 3.30 p.m. 10 units of pituitrin were given. At 3.50 p.m. the blood pressure registered 112/58, and 20 grains of extract (49a) were administered by mouth. At 4.10 p.m. the systolic blood pressure showed a slight fall to 106. A tracing of uterine contractions similar to that shown in Fig. 2 was obtained.

Discussion

These experiments, *inter alia*, seem to confirm in the case of the human puerperal uterus the observations made by Burn and Withell on the uterus of the non-pregnant cat. The main effect is one of relaxation of the uterine muscle. Contractions are diminished in force and frequency, secondary contractions are eliminated, and such contractions as occur are evenly spaced. The effect of fragarine upon the blood pressure is less pronounced in the human species in such concentrations and doses as have been applied. It is true that a very slight fall in the systolic pressure is noticeable, but there is no subsequent "conspicuous rise" as noted by Burn in the spinal cat.

It is obvious that further work remains to be done both from the pharmacological and from the clinical aspect, but apparently in fragarine we have available an active principle that may have a useful clinical application in the treatment of irregular routine action during labour and menstruation. In the absence, as yet, of any more elegant preparation, crude raspberry-leaf tea is being used in one of the Worcestershire maternity hospitals, and the nursing staff report favourably upon its effect in "making things easier."

In concluding this preliminary report of work still in progress my thanks are due not only to Mr. Bennison, Mr. Withell, and Prof. Burn for their active co-operation, but also to Prof. Gilding of the Department of Physiology, University of Birmingham, Prof. Chassar Moir, Oxford, and my registrar, Miss Terry, for valuable help in completing the clinical investigations.

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SOME CONTRIBUTIONS TO WAR SURGERY FROM THE U.S.S.R.*

BY

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War surgery is the continuation of the surgery of peace under somewhat different conditions. War demands adaptations, modifications, and development of technique and organization. It stresses the importance of some fields of surgery at the expense of others. It should be possible, however, to get some idea of the capacity of the surgical services of a State to react to war conditions from a study of their functioning in times of peace. I shall therefore introduce a description of the work of certain Soviet institutions, the consideration of which should lead us to expect from the Soviet Union a high standard of war surgery. At the same time it is important to consider developments in Soviet surgery in their relation to progress elsewhere, to the general evolution of surgical knowledge and technique. Our past ignorance must not allow us to regard Soviet surgery as something peculiar. Up to a point methods of research are similar and work advances along orthodox channels. We have to see the similarities as well as the differences.

As a start, then, I shall refer briefly to the past. It is impossible to assess the importance of what is happening to-day unless we can achieve some sense of historical perspective. Nowhere is this fact so well recognized as in the Soviet Union. The new Soviet State has been continually alive to the need to preserve the best from the past. Great attention is paid to the work of early pioneers and outstanding individuals in the history of science.

Historical

In this connexion one man stands out in Russian history—Nikolai Ivanovich Pirogoff (1810-81). He is regarded as the founder of Russian surgery. His chief individual contributions were concerned with wound infections in hospitals, ether anaesthesia, and the details of the organization of surgical aid for the wounded in war. It is claimed that he was the first to introduce the plaster wound dressing into military field practice, in the Crimean War in 1854 (Shmarevich). He recommended plaster as the best dressing for amputation stumps in 1855 and advocated the windowless plaster cast for open gunshot wounds of the legs. Pirogoff was a great man, and in the French literature has been compared to Ambroise Paré himself. No insignificant monument to him remains in the Military Academy of Medicine in Leningrad, which he developed into the finest school in the country. The school has continued, and only recently has produced important studies on the prevention and treatment of painful amputation stumps and scars by the early injection of novocain (Astvatsatourov, 1938).

Worthy upholder of the best traditions of the past and a link between the past and the future is Nikolai Nilovich Burdenko (see reference: VOKS), head of the Neurosurgical Institute, member of the Academy of Sciences, awarded the Order of Lenin for outstanding services in the field of surgery, active as President of the Medical Council of the People's Commissariat for Health, Chairman of the All-Union Association of Surgeons, and Deputy to the Supreme Soviet of the Union of Soviet Socialist Republics. Here is a man who obtained his initial experience and training before the revolution but has since been able to develop his work in all spheres of surgery. Recently his attention has been concentrated upon the establishment of a Russian school of neurosurgery. But his life's work has ranged over many fields in anatomy, physiology, experimental surgery, pathology, and general surgery. He is responsible for original work relating to the surgery of the lungs, gastric ulcer and carcinoma, shock, etc., as well as in the more limited field of neurosurgery. In addition to all this he is one of the outstanding experts on military hygiene and surgery, and his book on military field surgery is regarded as a classic.

Soviet Institutions

Typical of the best in the organization of Soviet medicine and directly relevant to a study of Soviet preparedness for war surgery is the Central Emergency Hospital in Moscow (the Sklifasofsky Institute) (1937) (Sigerist, 1937; Band, 1937-8). The Moscow district is served by five emergency motor ambulance stations, one of which is placed centrally at the institute, where there is a special telephone exchange. Urgent calls are received here, and the central station is responsible for sending out ambulances to accidents and cases of sudden illness.

There are two types of ambulance service. The first is for emergencies such as street accidents, factory disasters, and sudden collapse, and for genuine surgical emergencies when the call comes from a doctor prepared to make a definite diagnosis. The ambulance is sent immediately, and the medical and surgical staff are informed so that full preparation can be made. If a delay of more than two minutes occurs before the ambulance leaves the hospital an inquiry is held. The second type of service is used when a call is put through by relatives or strangers—if the case sounds convincing but is clearly not so urgent. Such cases have to wait their turn for a car, which will probably be sent within two hours. When the case is not considered by the doctor on telephone duty to come under this category the station recommends that a local doctor be called in, and gives the telephone numbers of local doctors and of the nearest hospital. It is important to note that no doctor is employed on the staff of the institute who has been qualified less than ten years. Long years of practice have made it possible to elaborate a series of leading questions and other means of eliminating serious error from this system of telephone sorting. In 1936 this ambulance service made 59,156 trips. The number of beds available is about 700, of which more than half are surgical. The medical staff numbers 100, with another 70 available for shifts on first-aid duty. The concentration of cases allows the surgical staff to amass a wide experience. Adequate records enable this material to be available for study and assessment of the results of different techniques (Grey Turner, 1938).

The most remarkable surgical work of the institute, apart from the original work on stored cadaver blood, is that of Prof. Judin. During a nine-year period 1,400 perforated peptic ulcer cases came under the care of his unit. Of these, 75% were treated by partial gastrectomy. In 1933-4 the mortality figure for gastric resection in 331 perforated ulcers was 7.8%. Prof. Judin is also an advocate of early resection in bleeding ulcers, claiming a total mortality of 4.4% for all gastric resections performed in the institute. The main factor responsible for these results is the organization which makes early operation possible in a high proportion of such cases. Mr. David Band (1937-8), in an account of his visit to the institute, expresses his surprise and interest that under a State medical service "it was possible for an emergency surgical specialist to extend his sphere of work to include not only the whole field of gastric surgery but in addition the many-staged plastic operations necessary for the rehabilitation of cases of oesophageal stricture subjected by him to emergency gastrostomy." We can only hope

* A paper delivered at a meeting held on July 25, 1941, at the Medical Society of London under the auspices of the Society for Cultural Relations with the Soviet Union.

that at this present time the Moscow Casualty Services have been developed along similarly efficient and elastic lines.

A second institute, of a rather different type, illustrates the planned clinical research into the treatment of injuries. The Leningrad Traumatological Institute (Dott, 1937-8), with only 80 beds, is the centre for this research throughout the Union. It has a statistical department which assembles and studies figures for injuries incurred in various industries—in agriculture, transport, etc. The results are passed on to the Commissariat for Health, which is able to proceed with energetic steps for the removal of remediable causes. Key clinical problems—e.g., some particular type of fracture—are selected for special study, and cases of this type are concentrated at this institute. When completed the results are published in pamphlet form and sent out to all the hospitals in the Union. A system of orthopaedic clinics linked with the main hospital extends its sphere of influence and helps to provide clinical material. Postgraduate teaching is an important feature of the institute.

Here, then, we have two examples of specially planned institutions, working as an integral part of the general medical organization. I think we can assume that the adaptation of such hospitals and teams of experts to war surgery should not be difficult.

I propose now to deal with examples of recent Soviet contributions to war surgery which illustrate among other things the planning of research and the provision of opportunities for full clinical trial of the results of such research.

Local Anaesthesia

The struggle to perfect the technique of local anaesthesia has stimulated the development of surgery since the days of Halsted's original work. The use of local anaesthesia for major surgery demands a high degree of surgical skill, with particular need for gentleness and delicacy, such as characterizes the modern school of neurosurgery founded by Harvey Cushing, himself a product of the Halsted school. In recent years the range of possible use of local anaesthesia has been extended. Finsterer developed its use in gastric surgery, and Ogilvie has popularized his methods in this country. Böhler demonstrated its value in closed and open fractures. Many surgeons have increasingly extended its application, particularly as proposed by Crile in association with some form of general anaesthesia sufficient to produce unconsciousness.

The Soviet contribution in this field is threefold: (1) a new technique; (2) the new application of a new drug; and (3) the demonstration of the practicability of using local anaesthesia in all types of cases, even under war conditions.

The new technique was originated by Vishnevsky (1938). Injecting large quantities of a weak solution (equal parts of 0.25% novocain and 1/4,000 percaine), he takes advantage of the normal anatomical fascial pockets surrounding muscles, viscera, etc., to get wide diffusion of the drug and rapid contact anaesthetization. Each aponeurotic layer is left intact until the underlying fascial compartment has been distended and anaesthetized. The fascial and aponeurotic anatomy of each region needs to be understood so that wide anaesthesia may result from a single continuous spreading infiltration from a chosen point. This technique of spreading infiltration can, it is claimed, be used everywhere except for the head and the extremities of the limbs. Vishnevsky describes in detail its application to the thyroid, to breast cancer and ventral hernia, abdominal cavity, biliary tract, renal fossa, and limbs. In the case of the fingers and toes a variation is used. Isotonic solutions are employed, and the soft tissues at the base of the digits are distended at first so that the risk of gangrene from circulatory interference is avoided. An important effect claimed is the minimization of post-operative shock. Already in 1938 Vishnevsky proposed that this technique should be tried out under war conditions. He quotes Crile's figures for major amputations during the 1914-18 war as illustrating the great reduction in mortality following the introduction of local anaesthesia. These conclusions are fully substantiated by the reports of Henry (1940) and Abdelsamie (1936) of their experience in the treatment of major limb crushes at Cairo. Vishnevsky goes further. He claims that the use of local anaesthesia by his technique is perfectly safe in the presence of local sepsis.

So much for the method. Stimulated by this, Synovich (1940) has carried out a series of clinical experiments using a Soviet preparation of percaine (sovkain) in increasingly dilute solution for local infiltration anaesthesia. He claims that it is fully effective at a strength of 1/10,000. It is suggested that at this dilution it is safe to use up to 25,000 c.cm. Actually no more than 1,000 c.cm. was used for one operation. Complete skin anaesthesia is attained within one to two minutes and is maintained for four to six hours. Deep infiltration produces immediate anaesthesia. No toxic reactions were reported.

The next stage is represented by the reports of Novikov (1940) from Moscow. He discusses 3,180 emergency operations, 98% of which were performed under local anaesthesia. Ages varied from 3 to 83; 37.5% were traumatic cases. Sixty-five cases of penetrating wounds of the abdominal cavity were treated, with a mortality of 36.8%. This compares favourably with a mortality of 55% for similar cases during the Lake Hassan incident. One hundred and fifty-four major amputations were performed under local anaesthesia, with a mortality of 14.7%, as compared with Akbutin's figure of 18.7% at Lake Hassan and 22.8% given by Belkin as the general mortality for all amputations of the lower limb in the Ukraine. The technique used was that of Vishnevsky. The trial of this technique under war conditions was carried out by Pschenichnikov (1940) and a team of surgeons during the Finnish campaign. A large series of unselected casualties was operated upon under local anaesthesia side by side with other surgeons working with general anaesthesia in two-table theatres. They were able not only to demonstrate the possibility of using local anaesthesia under these conditions but to refute the objection that this would mean an unnecessary lengthening of the operating time. They showed that such delay can be avoided even in cases with multiple injuries. Their cases were fit for evacuation much earlier than the others. The decrease in post-operative shock is stressed and the preliminary anaesthetization is regarded as part of the pre-operative treatment of shock. Thus many of the theoretical objections to the use of local anaesthesia in war surgery have been removed.

Electrical Trauma

The most comprehensive recent survey of this subject is contained in a lecture given by Kaplan (1940) of the Moscow Town Health Department for the Study of Electrotrauma. Modern military technical equipment makes wide use of electric power. Soldiers are exposed to danger of injury from electric current from their own power stations as well as from electrified wire entanglements and other new electrical means of attack and defence. Pathologically and clinically it is essential to realize that the external evidence of trauma is only a small part of the picture. All the tissues of the body, particularly the blood vessels and the nervous system, are exposed to a severe disorganizing influence. An important practical effect of the deep-seated nature of the disturbance is the long duration of treatment and the need for evacuation of any but the most trivial cases. Within two or three weeks the area of apparent damage

may have extended to twice or three times the original size. A surrounding zone which at first seemed likely to survive becomes necrotic. The base of a blister breaks down and becomes a deep ulcer. Adjacent blood vessels are involved in this necrosis, and severe secondary haemorrhages occur between the third and fourth weeks. Bone involvement results in slowly separating sequestration. Systemic reactions are varied and complex. Death may be instantaneous or may follow a short period of respiratory difficulty, haemorrhage, and cerebral disturbance. A condition of so-called "pseudo-death" is described, with cessation of heart-beat, respiration, and all reflex and nervous activity, without cellular death. Rapid active resuscitation may result in recovery. The onset of the condition may follow a latent period of a few hours.

The scope of first-aid treatment obviously depends upon local conditions. Where the shock is received during military operations it is clearly impossible to give prolonged treatment on the spot. The urgent need is for speedy evacuation. For this purpose a tank with a trap-door in the bottom has been devised. This moves over the casualty so that the man lies between the caterpillars, and can be lifted through on to a bed, where treatment is begun. Immediate treatment usually involves artificial respiration. Stimulant drugs may be given intravenously. Resistance to chilling is low. Cyanosis may require venesection. Severe circulatory collapse may respond to transfusion. Should there be no sign of life the patient must not be given up as dead until visible signs of death appear or stiffness sets in. Movement should be avoided if conceivably possible. A possible addition to routine restorative measures is the electrical stimulation of the phrenic nerve by application of an electrode over the lower part of the sterno-mastoid.

Treatment of external injuries is similar to that for thermal burns. Even the smallest marks, however, require full cleansing and application of coagulants, since these may become macerated and septic as a result of the excessive sweating. Primary amputation is generally inadvisable. It is difficult to define the limits of necrosis. Blood vessels are rigid, bleed violently, and tear across when forceps or ligatures are applied. Stumps become septic and the infection spreads rapidly.

Chest Wounds

[An account of recent British work in this field is omitted for lack of space. The reader is referred to the discussions (1940a, 1940b) held at the Royal Society of Medicine and to the *Bulletin of War Medicine*, 1941, No. 5.]

The available Soviet material in general confirms recent British experience but reveals a number of interesting new aspects. Papers by Linberg (1940) and Matseyev (1940) are based on a series of 972 casualties from the Finnish front treated at a special military hospital for chest wounds between November, 1939, and May, 1940. These included 263 with open pneumothorax and 96 with closed haemothorax. In 97 cases these chest wounds were complicated by severe injuries elsewhere. The total fatalities were 29 (3%). Of these, 12 resulted from severe combined thoracic and other injuries, including 5 cases of gas gangrene. The remaining 17 were from the effects of the chest wounds alone. Comparison with other figures is difficult on account of the very different stages at which these patients reach hospital. Ranson, an American surgeon working at Shanghai, gives mortality figures for chest wounds in hospitals for some of the various wars of the past century:

English Army in the Crimean War	79.2%
American Army in the Civil War	62.6%
German Army in the Franco-Prussian War ..	24.5%
English Army in the Boer War	14.0%
English Army in the 1914-18 War	27.5%
Chinese hospital at Shanghai, 1937	14.8%

The low figure for the Boer War is attributed to the climate and to the high proportion of bullet wounds. The last figure is explained by the fact that the cases with severe wounds did not reach hospital at all. Burdenko carried out a differential analysis of the fatalities from chest wounds on all fronts during the 1914-18 war. He gives a general mortality of 60 to 80%, reduced at primary hospitals to 30 to 40% and at base hospitals to 15 to 35%. In the light of such figures the present series merits careful study. Of these cases 2.5% reached hospital on the first day, 53% between the second and fourth days, 24% between the fifth and seventh days, and 20.5% between the eighth and twentieth days. Wounds of the thoracic wall and uncomplicated bullet wounds of the thoracic cavity gave little trouble and require no special comment.

Bullet and shell wounds with open pneumothorax constituted the most serious group. The 17 deaths from chest wounds alone came under this heading, comprising 6% of 263 cases. Of these, 246 (94%) had been sutured and only 17 extensive wounds left open. In the majority the muscle only had been sutured. Where the skin had been closed, spreading infection and surgical emphysema had developed. No previous operation had been carried out on the lung or pleural cavity. The chief problem in these cases of wide-open pneumothorax is that of keeping the wound closed and avoiding mediastinal flutter. Aspiration of all collections of blood prevents wound disruption from pressure. The lung is drawn out into contact with the chest wall and adhesions can occur. Where this happens residual accumulations can be dealt with as indicated. Where adhesions fail to form the wound is sealed by overlapping watertight strapping. In this group a number of operations were necessary for the removal of foreign bodies. Attempted suture of the lung when infection was established was found to be unsatisfactory.

Stimulated by this experience, Verhovich and Ignatovskaya (1940) carried out an extensive series of animal experiments. Their conclusions may be summarized as follows: (1) Either the thoracoscope or the cystoscope may be used with advantage in the exploration of open wounds of the thoracic cavity. (2) Increasing haemorrhage should be dealt with by lung suture and pneumopexy. (3) Where this is impracticable valvular suction drainage should be substituted. (4) Suture of the wound around a drainage tube with a 5-mm. orifice did not prevent the onset of severe symptoms. (5) Substitution of a tube with a 2-mm. orifice brought about improvement and allowed further exploration within twenty-four hours. (6) Mattress sutures produce necrosis of the lung tissue and should be avoided. On the basis of this work and of the general experience of the hospital, instructions were issued to those working in the advanced posts to attempt more radical primary intervention wherever possible in open pneumothorax.

The other important group, discussed particularly by Matseyev (1940), consists of the cases of closed haemothorax. Until recently these had been treated conservatively, but existing evidence suggests that early aspiration is the treatment of choice. Complete evacuation of the blood by repeated aspirations under radiological control is begun on the third or fourth day. This is combined with irrigation with mild antiseptic solutions—chloramine 1/500 or rivanol, 50 to 100 c.cm. This technique is substituted for air replacement on the basis of clinical and experimental evidence. Of the 96 cases only 2 became infected, and there were no deaths. Much of the general success obtained in this series is attributed to the fact that 65% of the cases were transported from the front by air. The condition of these, including many of the most severely wounded, was far and away better than that of those brought back by road. Other factors besides that of efficiency of organiza-

tion suggested as explanations of the excellent results were: (1) the magnificent state of health of the soldiers; (2) the predominance of bullet wounds; (3) correct treatment.

Another contribution to the surgery of chest wounds consists of a report to a conference of evacuation hospitals by Achutin (1940). It covers all chest wounds in the war zone during the Finnish campaign. No adequate justice can be done to this contribution in the space available, and only a few of the more important conclusions will be mentioned. With reference to the recommendations of Prof. Linberg, referred to above, Achutin admits that up to the present the problem of major surgical intervention in the war zone for open wounds of the chest has not been solved. Satisfactory results have been obtained only when cases have been seen within one to two hours and when the lung could be seized through the wound, sutured, and fixed to the parietes. Personal observations have led him tentatively to advocate the trial of vago-sympathetic novocain block as additional treatment for shock. The report reiterates the importance of air transport and of the different attitude which can be adopted towards these cases where such transport is available. This was especially important during the campaign in the far north, where the intense cold produced a high incidence of pneumonia, which developed about the fourth or fifth day. Evacuation after recovery from the initial shock and before the time of onset of these chest complications would appear to have been almost ideal.

Congratulating Prof. Linberg and the special unit on their magnificent work, Achutin points out that the total mortality is still high. As many as 40% of chest-wound cases do not leave the battlefield, while 20% of these patients die before the base hospital is reached. The solution of this problem requires the full application of all the available organizational, experimental, and clinical experience.

Conclusion

The march of history has done much to sweep away the veil of distrust which has separated the people of Britain from the people of the Soviet Union. I hope that this meeting will serve three purposes: first, to begin the removal of that prejudice and ignorance which has interfered with our understanding of the development of Soviet medicine and surgery; secondly, to help to get an understanding of some of the things which the Soviet people are fighting to defend; thirdly, to obtain some ideas for the improvement and reorganization of our work here.

Whatever success we may have to-day can only be a beginning. British medicine has much to contribute to the exigencies of this common struggle. We have a great deal to give, but we have plenty to learn.

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* These and other Soviet publications are available in the library of the Society for Cultural Relations with the Soviet Union, 98, Gower Street, W.C.1.

THE REDUCTION OF HOSPITAL INFECTION OF WOUNDS

A CONTROLLED EXPERIMENT

BY

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The demonstration by Miles *et al.* (1940) of a high incidence of hospital infection of wounds, and the recommendations formulated by them to reduce this incidence, were based in part upon investigations made on patients treated in this unit. It was thereupon decided to attempt the development of a dressing technique which would eliminate hospital infection as completely as possible.

Conditions of Experiment

The value of modifications in dressing technique was judged by the reduction of hospital infection observed in a four-months period from February 1 to May 31, 1941, as compared with a previous four-months period from September 1 to December 31, 1940. The intervening period of January, 1941, was excluded, since during this month the new dressing technique was being evolved and perfected.

In the two periods the underlying conditions were essentially the same. The clinical material handled was similar, consisting (1) of cases of head injury, mainly air-raid casualties whose wounds were infected at the time of admission; and (2) of neurosurgically clean cases, mainly intracranial tumours. The employment of chemotherapy was on the same basis during the two periods, and, finally, the personnel concerned with the dressing of wounds remained relatively unchanged throughout the entire eight months of the experiment.

The Improved Dressing Technique

The dressing technique here described was designed on the assumption that the main cause of hospital infection demonstrated in the first four-months period was the carriage of infected discharge from one patient's wounds to another's by members of the medical or nursing staff, settlement from the air and droplet infection being less important. Our aim was to combat the spread of infection in as simple a manner as possible—contact infection by the dressing technique itself, dust-borne infection by Rules 1, 2, and 6 in the instructions below, and droplet infection by Rules 3, 4, 5, and 9.

It was found impossible to reduce the dressing team to fewer than four persons unless dirty-dressing bins with foot-action lids could be procured. With this addition to the equipment the team could be reduced to a minimum of three. The first member of the team is the dresser, who begins his work when the bandage and outer dressings have been removed from the wound, finishing by applying the new bandage assisted by the "dirty nurse," after which he washes his hands and forearms and dries them on an ordinary towel. The "clean nurse" looks after the trolley and its contents only, touching nothing throughout the entire dressing round, and washing her hands and forearms only at the beginning and end of the series of dressings. The "dirty nurse"—an indispensable member of the team—removes the outer dressings and bandage and then stands by until the end of the dressing, when she assists in the application of the final bandage, afterwards washing her

hands and forearms. The bin porter carries two bins (one for washable soiled dressings and the other for dressings which must be destroyed) from one bed to the next, removing the lids and replacing them as required. He washes his hands and forearms at the beginning and end only of the round of dressings.

The dresser and "dirty nurse" therefore wash between each case, while the "clean nurse" and bin porter wash at the beginning and end of the dressing round, remaining "clean" and "dirty" respectively throughout. None of the team "scrubs up" in the surgical sense. The nurses wear ordinary uniform; the dresser works in shirt-sleeves.

Instructions Issued to Ward Personnel

GENERAL RULES FOR DRESSING

1. All bed-making, sweeping, and other activities likely to raise dust to finish half an hour before the start of dressings.
2. All windows allowing draughts, and the entrance doors to the wards, to be closed at the start of the dressing and kept closed.
3. All persons attending the dressing or having occasion to be near the dressing trolley or sterilizer *must wear masks*, consisting of two layers of gauze interleaved with impervious material (e.g., paper, cellulose acetate).
4. All persons such as ward maids, porters, and patients' visitors to leave the ward.
5. Any person entering the ward unavoidably must take a mask from the supply ready at the door of the ward and adjust it correctly.
6. No more than *one dressing to be uncovered at the same time.*
7. For patients with more than one dressing the full procedure must be observed for each separate dressing.
8. The door of the service room containing the washing sinks must be fixed open so that there is never the need to touch the door-handles.
9. No person having an infected lesion of the hand or with a sneezing cold to participate in the dressings.

TECHNIQUE OF DRESSING

1. Four persons only to take part in any one dressing: (*a*) the dresser; (*b*) the "clean nurse"; (*c*) the "dirty nurse"; (*d*) the bin porter.
2. The "dirty nurse" removes the safety pins and places them in a dish for sterilizing.
3. The "dirty nurse" removes all the outer dressings unaided and places them in covered enamelled bins, one for soiled dressings and the other for apparently clean dressings. The lids of these bins will be removed and replaced by the bin porter.
4. The "dirty nurse" then raises the patient's head.
5. The dresser places a towel beneath the head.
6. The "clean nurse" passes all dressings to the dresser with two pairs of sterile forceps.
7. The dresser carries out the dressing, using another two pairs of sterile forceps.
8. No contact between the two sets of forceps is permitted.
9. The dresser then places the dirty forceps in the sterile kidney bowl offered by the "clean nurse."
10. The dresser applies the final bandage, assisted by the "dirty nurse."
11. The "dirty nurse" takes the dresser's forceps in the kidney bowl, washes them with a wire brush in lysol, and places both instruments and bowl in the sterilizer, the lid of which is held open by the "clean nurse."
12. The "dirty nurse" washes her hands and forearms.
13. The dresser washes his hands and forearms.
14. The instruments are removed from the sterilizer by the "clean nurse," who places them on the trolley for the next case.
15. The bins for the dirty dressings are carried from one bed to the next by the bin porter.
16. At the end of the round of dressings the bin porter washes his hands for the only time.

Note.—None of the team "scrubs up" in the surgical sense of the term; each member starts work with hands and forearms washed with soap and hot water and dried on a clean towel. The "dirty nurse" washes her hands and forearms after each dressing, as does the dresser. The "clean nurse" after the initial wash does not wash throughout the periods of the dressings.

NURSING RULES

1. Washing of Patients.—A personal bath blanket to be kept in each patient's locker. Baths to be disinfected with lysol, and washing-bowls to be steeped for ten minutes in 5% lysol each time they have been used.
2. Bed-making.—All bed-clothes, pillows, and mackintosh sheets to be placed on chair at foot of bed and *never* transferred from one bed to another.
3. Soiled Linen, etc.—Bed-linen to be laundered in the usual manner. Face-flannels to be boiled. Blankets and pillows to be "stoved." Mackintosh sheets, combs, and brushes to be disinfected with 5% carbolic, and bedsteads and lockers with 5% lysol. Used linen for laundering to be placed immediately in a bin kept for that purpose. Linen soiled by discharges, pus, etc., to be soaked in 5% lysol before laundering.
4. Infected Patients.—Nurses must so far as is possible prevent infected patients from passing articles (books, newspapers, etc.) to other patients.

Sources of Infection

The hospital infection rate was determined with regard to *Streptococcus pyogenes*. The similarity of the sources of infection in the two periods is evident from the following surveys of the likely reservoirs of *Strep. pyogenes* in the unit—namely, air, throats, and wounds. All cultures from swabs and air exposures were made in blood-agar plates, and each colonial form of any haemolytic streptococci that appeared was sampled for grouping by Lancefield's method. Only those falling into Lancefield's Group A were regarded as potentially pathogenic *Strep. pyogenes*.

Air-borne Infection.—No systematic observations of air-borne streptococci were made in the first period: a few plates exposed during dressing-time yielded an occasional *Strep. pyogenes* colony. In the second period the deposition of *Strep. pyogenes* particles was measured twenty-two times, from 7 a.m. to 10 a.m., by exposing plates in both male and female wards. The bacterial counts were similar to those previously described (Brown and Allison, 1937; Miles *et al.*, 1940), reaching peaks during bed-making and sweeping. During these busy periods in the female ward an average of 7, and in the male ward an average of 9.6, *Strep. pyogenes* particles were deposited per hour on an area of one square foot. A few series of counts made throughout the day showed that during the quiet period (Rule 1) there was a reduction of 90% from an average number of about 8,000 bacterial particles deposited per hour on a square foot in the peak period, and it may be assumed that at dressing-time air-borne *Strep. pyogenes*, though correspondingly reduced, was nevertheless a source of potential infection.

Throats.—Throat swabs of patients, doctors, nurses, ward maids, and all other frequenters of the department were taken at intervals of not more than a fortnight throughout the two periods of investigation. The number of persons carrying *Strep. pyogenes* in the throat in each of the three groups—staff, female patients, and male patients—at any one period varied between 0 and 3, though periods when no throat carriers were found were infrequent. At no time was the community as a whole free from throat carriers. In the two wards the incidence was similar; reckoned on the basis of fortnightly sampling, 12% of all persons in the unit during the first period were carriers at one time or another, and 10.1% in the second period.

Wounds.—Wound swabs were taken from all air-raid casualties at the first dressing after admission, and subsequently as opportunity arose, usually twice weekly. First swabs were cultivated both aerobically and anaerobically; subsequent swabs, if the first swab had yielded no obligate anaerobe, were tested aerobically only. From "clean" cases swabs were taken if sepsis developed.

The reservoir of *Strep. pyogenes* contributed by infected wounds existed throughout almost the entire eight-months period. For two spells of twenty days and fifteen days in the second period there was in the male ward no patient with a wound discharging these organisms; during these spells, nevertheless, *Strep. pyogenes* was present in the air and in the throats of several of the community as a potential source of hospital infection. In the female ward there was a constant reservoir in one or more wounds. The

wounds discharging *Strep. pyogenes* comprised those which became infected in the ward (see table) and those which were already infected with this organism on admission. Of the latter there were in all in the first period 3 (2 in the male ward and 1 in the female ward), and in the second period 11 (5 in the male ward, 6 in the female ward); therefore, including the patients infected on admission, there were altogether 15 streptococcal wounds in the first period and 15 in the second period.

Table showing Incidence of Hospital Infection of Head Wounds with Strep. pyogenes in Two Four-month Periods, before and after Introduction of Improved Dressing Technique

	1st Period	2nd Period
Air-raid casualty wounds:		
Number uninfected on admission	32	46
Number of hospital infections	10	1
Percentage incidence of hospital infection	31·3	2·2
"Clean" operation wounds:		
Number operated upon	46	49
Number of hospital infections	2	0
Percentage incidence of hospital infection	4·4	0·0

Results and Discussion

The table records the incidence of hospital infection by *Strep. pyogenes* in the two periods. Hospital infection by haemolytic streptococci other than Lancefield A occurred during the first period, but has not been included in the analysis. It appears that a total infection rate of 15.4% has been reduced to 1.1% by the enforcement of the improved dressing technique and ward organization described above. A number of air-raid casualties admitted in the second period had in addition to their head injuries wounds of the trunk and limbs. Thirteen of these wounds were dressed by the improved technique, and in this group there was no streptococcal hospital infection. Six limb wounds, however, because of their minor character, were dressed without these improved precautions—a relaxation of procedure which proved to be indefensible, since three of them became infected with *Strep. pyogenes*. The result indicates clearly that a large risk of hospital infection was present in the unit during the second period.

The improved technique was devised for neurosurgical work mainly on head wounds. In surgical wards where wounds are larger in area or are exposed for longer periods, and where dressing involves more disturbance of bedclothes (Thomas and van den Ende, 1941), air-borne bacteria may constitute a greater risk; and in wards where, for example, bathing and irrigation form part of the wound treatment there may be additional channels of infection important enough to warrant revision of the existing therapeutic methods. Nevertheless, it is possible that a greater relative reduction in incidence of hospital infection than that which we have recorded might be achieved in other surgical wards by the adoption of the improved dressing technique only. The technique originally used in the unit was considered to be bacteriologically safer than methods normally employed in general surgical wards, an opinion supported by the fact that the incidence of hospital infection in the preliminary observation period was lower than that obtained under war conditions elsewhere in the same hospital and in other hospitals.

It proved possible to maintain the improved dressing technique under the difficult conditions following the admission of a large number of air-raid casualties in a short period of time. At all times, and especially in times of stress, the intelligent co-operation of the nursing staff is essential if satisfactory results are to be obtained. We cannot praise too highly the work of Miss Mackinder, the sister in charge of the unit, and her nursing staff, without whose help the improved technique could not have been put into effective use.

We have presented no data upon the ill effects of hospital infection, since they will form the subject of another paper; it may be said here, however, that the hospital infection produced serious complications in a small number of patients and a marked and significant lengthening of the average time of stay in hospital in the group of patients so infected.

Summary

During a preliminary observation period of four months the incidence of hospital infection with *Strep. pyogenes* among head wounds in a neurosurgical unit was 10, or 31.3% of 32 air-raid casualties, and 2, or 4.4% of 46 "clean" operation cases.

An improved dressing technique and a partially revised general ward procedure were designed to lower this rate of hospital infection.

During a test period of four months following the introduction of this technique as the routine method of dressing head wounds, the incidence of hospital infection with *Strep. pyogenes* was 1, or 2.2% of 46 air-raid casualties, and 0 of 49 "clean" operation cases.

Among the patients with head injuries treated in the test period were 19 with limb or trunk wounds. Thirteen were dressed by the improved technique, and there was no instance of hospital infection with *Strep. pyogenes* in this group. The remaining 6 were dressed without the improved precautions, and 3 of these, or 50%, became infected with this organism.

The conditions in the wards were essentially similar in the two four-months periods of investigation, and we attribute the striking reduction of hospital wound infection from 15.4% to 1.1% to the introduction of the improved dressing and nursing technique.

We are indebted to Dr. Herta Schwabacher, Dr. Joan Stokes, and Mr. E. P. Murrell for assistance with the bacteriological investigation; to Dr. Brian Brownscombe for collaboration in the clinical work; and to the Medical Research Council for a personal grant to one of us (J. W.).

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Medical Memoranda

Tenosynovitis of the Tendo Achillis

This condition has become extremely prevalent in infantry units. Forty cases have been investigated and the following observations made.

Clinical Signs and Symptoms

The patient complains of pain in the heel along the Achilles tendon. This is relieved by wearing light shoes, but reappears on wearing boots, particularly after marching. On examination slight swelling of the lower inch of the tendon sheath is apparent. There is usually one point extremely tender to pressure about an inch from the insertion of the tendon into the os calcis. On movement of the foot, flexion, and dorsiflexion, tendon crepitus is easily palpable in most cases. The crepitus is often felt along the whole course of the tendon from its origin in the muscle belly of soleus and gastrocnemius to its insertion. Clinically the condition is identical with simple tenosynovitis as seen in the extensor sheaths of the forearm.

This condition occurring in the Achilles tendon has been described as a bursitis. Tendo Achillis bursitis is a completely different clinical entity which generally follows some violent exertion—e.g., a cross-country run: the painful spot is usually nearer the point of insertion of the tendon, and there is complete absence of tendon crepitus.

AETIOLOGY AND TREATMENT

Tenosynovitis of the Achilles tendon is undoubtedly due to repeated minor traumata which, in my opinion, are caused by an abnormal focus of pressure in the boot. The forty cases were investigated with special attention to the following points:

1. Height of the man, and whether the pace is abnormally short. The height varied from 6 ft. 1 in. to 5 ft. 4 in.

2. History of Forced Marching.—A history of forced marching was obtained in 50%. In 10% the condition arose following prolonged marching—i.e., marching at normal rate but for a longer period during manœuvres; 10% were in mechanized sections.

3. Abnormalities of Feet (e.g., first-degree flat-foot, hallux valgus, pes cavus, etc.).—With one exception, none of these men suffered from any foot deformity.

4. Boots.—It was thought that a new issue of Army boots which might be unduly stiff at the back (the leg or quarter) might be the cause. The boots had been in use for a period of three to eighteen months.

5. Effect of Gaiters on Shape of Boot.—All the men wore the webbing gaiters. In every case a constricting ring was formed on the boot by the lower strap of the gaiters being pulled tight. In this way a small ridge is formed at the back of the boot which causes slight pressure on the tendo Achillis. Slight jarring, as would occur in ordinary marching, between the tendon and this ridge seems to be the chief cause of the tenosynovitis.

The theory that gaiters are the causative factor is supported by the fact that (*a*) the wearing of light shoes relieves the condition, but that it recurs on resuming boots and gaiters; (*b*) gaiters wear out at the points of the friction at the heel and over the lace-holes of the boot. Tenosynovitis of the tibialis anterior is often associated with the condition in the Achilles tendon.

A looser-fitting gaiter is required that will not cause a constricting ring on the boot, so avoiding abnormal pressure on the Achilles tendon. Most men wear a gaiter which is so tight-fitting that there is no overlap, and the gaiters bulge at the side, leaving a wide gap. Leather gaiters appear to be much looser, and ride easier on the foot. Larger gaiters or leather gaiters will prevent this condition arising, except occasionally.

The following lines of treatment have been adopted: (1) Rest and the use of a counter-irritant—e.g., Scott's dressing. Most cases clear in five to seven days, but about 20% are more resistant to treatment. (2) Infiltration of the tendon sheath and surrounding subcutaneous tissue with 2% novocain. Three injections each of 5 c.cm. are given on alternate days. If there is no improvement the foot has to be immobilized in plaster-of-Paris for four to six weeks.

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Local Arrangements under the Cancer Act

Rather more than a year ago the Minister of Health informed local authorities of his decision to extend to March 31, 1942, the period during which they may submit their arrangements under the Cancer Act, 1939. The Minister recognizes that in general it is not possible for local authorities to make complete arrangements under the Act at the present time, and in Circular 2469, dated August 30, 1941, he extends the period for a further twelve months, while urging those who have not already done so to submit, as soon as possible, interim instalments pending formulation of more complete schemes. Local authorities should exclude from such interim arrangements the erection of new buildings, elaborate extensions to existing buildings, or the provision of costly new equipment. Much could, however, be done even under present wartime conditions by extending the facilities for diagnosis and treatment that now exist. Conditions in some of the specially vulnerable towns may be reducing or impeding the hospital treatment facilities available to sufferers from cancer, who may thus be precluded from obtaining hospital treatment which might be likely to benefit them. To counteract this the Minister is endeavouring to arrange, where practicable, for cancer treatment centres to be set up at certain of the hospitals in the Emergency Hospital Scheme outside the towns which they would serve. These centres would be a temporary and emergency provision to meet the exceptional conditions in these towns.

Reviews

THE AVITAMINOSES

The Avitaminoses: The Chemical, Clinical and Pathological Aspects of the Vitamin Deficiency Diseases. Second edition. By Walter H. Eddy, Ph.D., and Gilbert Dalldorf, M.D. (Pp. 519; illustrated. 25s.) London: Baillière, Tindall and Cox. 1941.

Since the publication of the first edition of *The Avitaminoses* certain vitamins have become available in pure form, and some have even been synthesized. This has led to the treatment of patients with the pure products, and much information has been acquired about deficiency diseases generally. The authors of this book have gallantly tackled the very difficult problem of sorting out the evidence which has accumulated during the last few years, for the information available is mostly the result of observation (no controls), not of experimentation (performed with controls). Their main conclusions, emphasized time after time throughout the book, are that a deficiency of one vitamin does not in general produce one specific lesion but a number of lesions which are not all specific to the vitamin in question, and, moreover, that most patients suffering from a deficiency of one vitamin are also suffering from deficiencies of several others. They also show clearly that the picture produced by a severe deficiency is not merely a more pronounced picture than that produced by a partial deficiency but a more complicated one altogether.

In connexion with the vitamin values of foods it would have been useful to have a short account of the need for and use of international standards of reference until the time when pure preparations should be available for comparisons in determinations of the vitamin contents of foods. It is a pity even to mention the obsolete units which were at best a temporary makeshift until international standards and units could be adopted. Vitamin B_6 (p. 6) is not a filtrate factor but an eluate factor from liver extracts, and pantothenic acid was the first factor (there may be others) identified in liver and yeast filtrates. But apart from various minor inaccuracies this is a valuable book of reference for all who are interested in deficiency diseases, and particularly for those (such as our own general practitioners) who may have to diagnose cases of partial deficiency in their daily rounds. The book contains 41 excellent plates from photographs of patients or morphological sections of deranged tissues.

GASTRIC OPERATIONS

Technique of Gastric Operations. By Rodney Maingot, F.R.C.S. Oxford Medical Publications. (Pp. 240. 15s. net.) London: Oxford University Press. 1941.

Mr. Rodney Maingot has produced a very readable and well-illustrated book of convenient size dedicated to a list of sixty-two students from the London Hospital who because of the war were transferred to the Southend Hospital for part of their clinical training. We hope, however, with all due respect to Mr. Maingot, that medical students will not spend time on memorizing the contents of a work such as this, which admirably deals with technical details important to the gastric surgeon but, we hope, as yet not within the visual range of the undergraduate student, who, faced with the extensive curriculum of to-day, is likely to be in real danger of missing the wood for the trees. The book has not the advantage of a historical introduction, which might have given it some value to the student, who will surely tend to be confused by the many variations in technique to which names of different surgeons are attached.

At a time when paper shortage is acute, when we are exhorted to use old envelopes again and again and save every scrap of waste, when our weekly medical journals are much reduced in size, so that topical and original productions have to be curtailed or at least delayed, it is rather strange that a textbook on technique unconnected with war surgery should appear in large print and handsome binding. More especially is this so when it is realized that most of the matter it contains can be found in the very recently published work on abdominal operations by the same author (reviewed in this *Journal* on May 31, 1941, p. 819) and in the many editions of textbooks we already possess.

It is probably true to say that there is nothing new in the book: it is certainly an expression of experienced opinion, but diluted with descriptions of the procedures of many others so that at times it is a little difficult to seek out the author's own point of view. Of total gastrectomy we are told that records in British literature are scanty but that Joll has performed twelve, Dickson Wright eleven, Walton eight, and Gordon-Taylor six. No references are given, however, and the figures of Grey Turner, Devine, and others with well-known experience of this operation are not mentioned. Coming to the types of gastric resection we find the statement, "It would appear immaterial on physiological grounds whether the cut end of the stomach is anastomosed to the duodenum or jejunum"; but surely there can be no refuting the fact that the proximal end of the duodenum is the normal receptacle for gastric contents and that this constitutes the great merit of the Billroth I type of operation.

This book may be summed up as a clearly written account of operations on the stomach practised at the present time by many surgeons, including the author. It is a far from complete account, as no doubt the author would be the first to admit, but at the same time it is in our opinion too technical for the undergraduate student. Its appeal should be to the young surgeon beginning his hospital work, but we hope with enough judgment not to be misled into becoming too ardent a gastrectomist.

SCIENTIFIC TERMS IN FRENCH

French-English Science Dictionary for Students in Agricultural, Biological, and Physical Sciences. By Louis De Vries. (Pp. 546. 24s. 6d.) London: McGraw-Hill Publishing Co., Ltd.

This dictionary, compiled by the professor of modern languages at Iowa State College, gives English equivalents for 43,000 French words. It has been compiled for students in biology and physics, and although under both these headings a large number of medical terms come in, it is not, and does not pretend to be, a medical dictionary. Many scientific terms are the same, or practically the same, in French as in English. Words like "hormone" and "vitamin," for example, are the same. Sixty words with the prefix "micro" and fifty with the prefix "photo" are almost identical in both languages, but it is useful to have them included, otherwise the student would neglect them, whereas now he has only to turn to Webster or Murray for further definitions. A list of about 700 abbreviations is appended to this volume. Abbreviation is a strong point with the French. Thus their small "t" may stand for time, temperature, revolutions (*tours*), metric tons, and volume, among other things, and their small "p" for weight, power, pulse, or page. It is interesting to notice the quite considerable number of words for which the French language is indebted to the English. One of these is "guinée," which, as it is the standard of professional remuneration, probably deserves inclusion in a science dictionary.

NEUROLOGICAL LOCALIZATION

Compendium of Regional Diagnosis in Lesions of the Brain and Spinal Cord. A Concise Introduction to the Principles of Localization of Diseases and Injuries of the Nervous System. By Robert Bing, Professor of Neurology, University of Basle, Switzerland. Translated and edited by Webb Haymaker. Eleventh edition. (Pp. 292; illustrated. 25s. net.) London: Henry Kimpton. 1940.

This translation of a work which has been justly popular on the Continent for the past thirty years will be welcome to students and practitioners on both sides of the Atlantic. Professor Bing here collects neurological data and arranges them with a view to the anatomical localization of the responsible lesions. Neuro-anatomy and clinical disturbances are thus correlated and set out in a way that greatly aids diagnosis. The present English edition preserves the form of the original text, its numerous excellent illustrations and diagrams being supplemented by radiographs supplied by Dr. H. C. Naffziger. The chapters are topographically arranged, and in each region the normal anatomy is first described, with special emphasis on the paths of conduction, followed by a section dealing with the symptomatology of lesions in the region. All these sections are lucidly written and admirably illustrated. The text has been brought up to date by a series of editorial footnotes. While these might profitably have been introduced in small type into the text they are not numerous enough to be a burden to the reader.

Notes on Books

Colonel C. ARTHUR WEBSTER has written a booklet of sixteen pages, under the title of *Fighting Fit*, which is full of useful hints on hygiene for the soldier. It is clearly and attractively written and can be read in a few minutes. In the hands of the soldier such a booklet should play a useful part in maintaining morale and keeping the men up to proper hygienic pitch. It was printed for private circulation, but a few copies are available, and application should be made to the author, H.Q., 4th A.A. Division, c/o G.P.O., Preston.

It is now thirteen years since we first commended to the notice of our readers a manual of birth control entitled *Parenthood: Design or Accident?* by a medical man writing under the pseudonym MICHAEL FIELDING, with a preface by Mr. H. G. Wells. This booklet was reprinted many times to meet a constant and well-merited demand, and revised editions came out in 1930 and 1934. The author's identity has long been an open secret in well-informed circles both within and outside the profession. He has once again brought the text up to date for a fourth edition, which is published by Williams and Norgate at 2s. 6d. (with cloth cover 3s. 6d.). The contraceptive methods taught by British and American authorities are described, with emphasis on some small but important modifications recently made in established methods and on new devices and expedients which have resulted from the investigations of the past few years.

Dr. ROY R. KRACKE'S *Textbook of Clinical Pathology*, which was published in 1938, now appears in a second edition under the joint authorship of Kracke and Francis P. Parker, with fourteen contributors in all. The defects consequent on multiple authorship which we criticized in the original edition have been remedied by rearrangement and better co-ordination, and, in particular, methods of general bacteriological examination are now more adequately described. The increase in size, amounting to nearly 200 pages, is due also to the introduction of much new material, and the range of diagnostic tests now covered is wide, although there are still some peculiar omissions, such as the test for occult blood in faeces, and the space-allocation in relation to the importance of the subject varies. The book is well illustrated, and for many purposes will be found a valuable guide. It is published at 33s. by the Williams and Wilkins Company.

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TRAUMATIC SHOCK—PAST, PRESENT, AND FUTURE

At the end of the last war fairly general agreement had been reached that traumatic shock consisted of two separate entities: primary shock, developing early from a supposedly neurogenic cause; and secondary shock, developing late as a consequence of absorption from the injured tissues of substances resembling histamine in having a noxious effect on the capillaries generally. Little remained except to round off the evidence in some particulars and to settle the vexed question whether transfusion should or should not be employed in treatment. With the arrival of the more leisurely years of peace, the animal experiments on which the theory of traumatic toxaemia was chiefly based were repeated and the evidence crumbled away. Persistent inquiry failed to reveal any toxic substance in blood returning from injured tissues, and careful experiment showed that circulatory failure developing in animals after crushing the legs could be largely accounted for by the amount of blood and plasma lost into the swollen limbs. At the outbreak of the present war it became urgently necessary to re-examine *ab initio* the question of traumatic shock from the clinical point of view. Several questions demanded an answer. What do we mean by shock? Is it an entity or does it comprise several distinct conditions? What are the initiating and contributory factors and how can they be prevented or combated? Information relevant to these questions was collected in the last war and issued in M.R.C. Reports 25 to 27, and in this war is to be found in communications from the Army Blood Transfusion Service,[1] from the Hammersmith workers,[2] and in our last two issues from Grant and Reeve,[3] who have analysed 100 case records submitted to the M.R.C. Committee on Traumatic Shock.

Shock is usually defined by a description. But descriptions are so varied that no one would satisfy all who use the term. Traumatic shock is in general used to denote any generalized disturbance in the function of the body following in a short space of time a more or less localized injury. It may mean no more than the effects of fright, but is more generally used to denote a grave disturbance often ending in death. It is becoming clear that the term "shock" may cover a multitude of conditions, and it is now known that more than one condition may be included in secondary shock. Thus attention has been drawn elsewhere to fat embolism[4,5] and in this *Journal*[5] to curious disturbances in renal function and plasma electrolytes after crush injuries. Although these are relatively uncommon conditions they serve to illustrate the fallacy of regarding even so-called secondary shock as a clinical entity.

Because the meaning of the word is uncertain, and because it may convey a false sense of unity, Grant and Reeve do not use the term "shock," remaining on safer ground by describing and classifying reactions to injury. They divide their cases into three groups according to whether, on the first examination, the blood pressure is high, normal, or low, the third group being subdivided into those with slow, normal, or fast pulses. Although, as they point out, the data are too meagre to allow final conclusion, yet it seems that the type of reaction is determined, among other things, by severity of injury, by the amount of blood lost, by the time after injury when the patient is received, and by the patient's age. Groups 2 and 3 apparently represent successive stages in the response to injury and loss of blood, while the subdivisions of Group 3 are partly determined by age. The hypertensive reaction is more obscure, but Fraser and Cowell[6] found it particularly common in wounds involving the ventricles of the brain.

At the outset of this war there were still some surgeons who had scant regard for the value of transfusion in the severely injured. Though there are some who still maintain this attitude, all serious observers are agreed that transfusion, provided it is instituted early enough and is given in adequate amounts, is a most important, perhaps the most important, measure in resuscitation. The paper by Grant and Reeve fully bears this out. In determining the need for transfusion they regard the severity of the injury and of the loss of blood as the most important guides, since the blood pressure and pulse rate may be maintained precariously and for only a short time. The complete failure of the pulse as a guide to the general condition is to be emphasized, for many injured patients still go through the whole period of their management without record of blood pressure; it is time this lamentable practice ceased. A second therapeutic point which Grant and Reeve emphasize is the need for operation as soon as resuscitation has been adequately carried out. It is unfortunately true that many surgeons still believe that the most important factor in combating shock is the lapse of time, and many lives are wasted because of the failure to advance by adequate transfusion the time when operation becomes safe.

There is still ample scope for improvement in the treatment of the injured. Of the 100 cases recorded at least forty-four patients died. In many of these cases death could be accounted for satisfactorily by the nature of the injuries; in others it was due to inadequate transfusion, anaesthesia, or infection. But in eight the cause of death remained obscure. This is a high proportion, and it may serve to bring the reader sharply back to the question of what are the causes of the conditions lumped together as shock. We do not know. We know that in many, perhaps in most, haemorrhage either external or internal is a chief factor, and we believe that pain and exposure often contribute. Fat embolism and the crush syndrome stand out as clear examples of disturbances we may hope to understand when further

[1] *Lancet*, 1941, **1**, 99.
[2] *British Medical Journal*, 1941, **1**, 427 et seq.
[3] Ibid., 1941, **2**, 293, 329, 332.
[4] *Lancet*, 1941, **1**, 135.
[5] Ibid., 502.
[6] M.R.C. Report 25, 1919, p. 55.

work has been done. Infection also plays its part in some instances. But when all the factors are considered and integrated there remain patients who die without our knowing why. This knowledge will come only as a consequence of patient and intelligent observation of injured people; in a separate memorandum in our last issue Grant outlines some observations that are needed. The question is urgent, and it is to be hoped that some of those dealing with accident cases will avail themselves of their opportunities and help to elucidate once and for all the mystery of so-called shock.

DOMESTIC WATER SUPPLIES IN WAR

The fall in the incidence of the enteric fevers in recent years has been variously attributed—possibly in accordance with the predilection of the individual—to improved sanitation, increased purity of water supplies, and, particularly in the Army, to protective inoculation. The Annual Report on the Health of the Army in India for the year 1939 (vol. 2, part 1, paragraphs 12 and 13) throws considerable light on the subject. The incidence of enteric among the troops in India, expressed as a ratio per thousand, averaged 1.2 during the period 1936-9, compared with 3.3 during the period 1919-28, and since 1929 the tendency has been towards a slight but progressive decline with only an occasional minor setback. That the diminished incidence has not been due to improvements in general sanitation is strongly indicated by a comparison with the incidence of the dysenteries, a disease group essentially associated with insanitary conditions. The incidence of this group has shown an almost steady rise since 1932, which is described as "an entirely different and unsatisfactory state of affairs." The facts presented, therefore, appear to justify the following comment, also extracted from the report: "Considering the disease was rife in the surrounding villages we must conclude that inoculation and water treatment are the causes and our safeguard, and that it is not due to improved sanitation (other than water)." Inoculation played no part in the decline in enteric fever in England or the elimination of cholera which took place towards the end of the nineteenth century, following closely upon an energetic campaign and legislation for increasing the purity of water supplies. The continued but more gradual decline in enteric which has taken place during the twentieth century may be attributable in part to an awakening sanitary conscience, but it is reasonable to believe that it has been greatly contributed to by a gradual fall in the number of carriers, since this reservoir of infection is no longer frequently reinforced by water-borne epidemics. Knowledge of these matters is not exact enough to permit of dogmatism, but there can be little doubt that our first line of defence against a serious recrudescence of enteric is the maintenance of the purity of domestic water supplies.

The prevention and the suppression of water-borne disease are comparatively simple matters in times of peace. The case is very different when we are at war. At such times agencies directly or indirectly attributable to enemy action may counteract the most elaborate safeguards which water undertakings can provide. This has already been the experience of more than one of our cities. The epidemiologist is well aware that the establishment of epidemic conditions depends upon the connecting up of a number of links, and that our immunity up to the present has been due to the absence of some essential link or links in the chain of infection. In view of the comparatively slight incidence of diseases of the enteric group during the past decade, it is not unreasonable to suppose that one limiting factor has been the paucity of the specific bacteria in sewage. It is true that one cannot demonstrate the presence of these organisms in the effluents from many sewage works. It is equally true that they can be recovered regularly from sewage effluents derived from towns in which there has been no epidemic for many years. At the best estimate the potential danger is therefore constantly present, despite past experience.

The substance of the matter is not whether this potential danger exists, for its existence is already a well-established fact, but how far it may become a real danger to the health and to the morale of the country. To appreciate this it is necessary to visualize the possible results of a first epidemic of typhoid fever. A number of persons would suffer from the disease; an additional number would become infected but would have so mild an attack that they would not seek medical advice, or would not be ill at all. Those in each group would, for varying periods, become infective. The paucity of the specific organisms in sewage, which may have been the decisive factor in our past immunity, would no longer exist in the locality infected, and a travelling reservoir of infection would be created which might disseminate the germs in other localities. Each succeeding epidemic would increase the probability of another and larger one, and this probability might, at any time, be transformed into reality by circumstances beyond the control of those primarily responsible for the purity of our water supplies.

Those of our cities which have been the object of indiscriminate bombing have been exposed to various risks which differ widely in character. The possibility of epidemic disease resulting from overcrowding and poor ventilation in air-raid shelters and the serious effect this might have upon the morale of the people and the war effort of the country are obvious. The public, however, is hardly conscious of the grave consequences of water-borne disease. The Croydon epidemic has been forgotten or is not associated with the potentialities of war. The public is protected against the risks of water-borne disease by the unremitting care of the water undertakings throughout the country. They have proved their worth, but their widespread network of machinery and services has no immunity against indiscriminate bombardment. The enormous demands made upon their services for fire-fighting were not anticipated before the war, and their capacity, already strained, may be limited by war damage. Gaps in their defensive organization have been and will be created, and it is of the utmost importance to consider what reserve stands behind them to fill those gaps. The purification of water by individuals in their homes might provide an effective second line of defence against the

pollution of piped supplies, but such endeavours as have been made to educate the people in this matter have met with limited success. After heavy bombardment it is often difficult or impossible to boil water owing to interruption of the gas and electricity supplies, and simple chemical methods of purification which could provide a high degree of protection are unlikely to be widely used in the absence of any co-ordinated scheme for the education of the public and the provision of materials on the scale of that adopted for defence against poison gas. In the existing state of knowledge only a limited degree of protection could thus be expected from any measure which might depend upon the individual if left to his own devices, and we must therefore consider our last line of defence. Should there be good reason to fear an epidemic of enteric fever the surest means of prevention would undoubtedly be the intelligent use of preventive inoculation. Once decided upon this would have to be carried out without delay, and a high degree of success could be achieved only were it done under compulsion. The argument against this might well be overwhelming, and, if the risk were widespread, the performance of inoculation in the time available might be very difficult. We are thus driven back upon purification of water by the individual, and have to consider how the highest degree of protection can be secured in this way. Plans must be carefully worked out in advance, sufficient materials must be available, and the public must be educated in their use. We cannot afford to rely upon last-minute improvisation.

One point needs emphasis—the effectiveness of any precautions which may lie behind the water undertakings is limited, and theirs must always remain the first line of defence. This fact, however, provides no justification for not bringing each line up to its maximum efficiency, and this can be done only by planning and organizing on a uniform national scale. Lieut.-Colonel E. F. W. Mackenzie, Director of Water Examination to the Metropolitan Water Board, to make doubly sure of the efficiency of an already highly efficient undertaking, has recently asked the Board to set up a consultative committee which shall provide a closer link between himself, the medical profession, and the public health service in the Board's area. The chairman of this committee is Lord Horder, and it has on it representatives of the London School of Hygiene, the Society of Medical Officers of Health, and the Royal Sanitary Institute. Londoners may feel grateful that this additional care is being taken on their behalf.

DEATH FROM PLASMA TRANSFUSION

During the past year or so transfusions of various blood derivatives have been used in this country on a big scale. The number of such transfusions has run into thousands, and in addition larger quantities of fluid have been given to individual cases than have probably ever been used before. No authentic instance has, however, been recorded of a death thought to be immediately due to either plasma or serum. Dr. Frank Mayner has now recently reported[1] a disaster which he attributes to a plasma transfusion. A boy aged 4 came into hospital with unexplained severe oedema of one week's duration after a "cold in the nose." The oedema was associated with a reduced urinary output. On examination the total plasma protein was 5.6 grammes per 100 c.cm., and in the urine, which was loaded with albumin, were red and white cells and hyaline, waxy, and granular casts. Many forms of treatment were tried, and after fresh-blood transfusion the patient was finally discharged with improvement in his oedema and with his urine free from albumin. After twenty-six days he returned with another respiratory infection and increased oedema. He was on this occasion transfused with 100 c.cm. of unfiltered saline citrate plasma prepared from the same donor. He died suddenly, becoming cyanotic and dyspnoeic during the transfusion. At necropsy microscopical examination showed subacute glomerular nephritis and multiple emboli of fibrin in the terminal pulmonary vessels and capillaries. Dr. Mayner concludes that the immediate cause of death was anoxaemia due to multiple emboli of fibrin in the capillary system of the lungs, and admits that this was possibly due to failure to use a filter during either preparation or administration of the plasma. In this country the bulk of the plasma used is filtered through a Seitz pad before issue, and is then passed through a coarser filter during administration, so that death from fibrin emboli is most unlikely to occur. Dr. Mayner also suggests that it may have been unwise to employ the same donor twice for the same patient, and quotes other cases of blood transfusion in which disastrous results have followed such an action. The case should not be regarded as in any way invalidating the use of plasma as a transfusion fluid in appropriate conditions, but does serve to emphasize the importance of adequate filtration.

[1] *J. Amer. med. Ass.*, 1941, **116**, 2015.

CHEMICAL NATURE OF BACTERIAL ANTIGENS

In producing immunity with killed bacteria a number of substances must obviously be injected which have very little value in protecting the body against specific infections. If the chemical constitution of bacterial antigens could be systematically investigated it might be possible to isolate the essential antigens as chemical substances and thus to employ them for immunization; or, better still, synthesis of the essential antigens might well be attempted. Specific antigens could then be produced in unlimited quantities in the chemical laboratory. The first investigations on these lines were made by Boivin, Mesrobeanu, and Mesrobeanu[1] in 1933 on *Bacterium typhi-murium*, and were later continued by Raistrick and Topley[2] and others. A number of Gram-negative organisms have now been examined and their antigens isolated in a relatively pure condition without apparent change in their specific immunological properties. The two chief methods employed have been trichloracetic acid extraction and tryptic digestion. Freeman and his colleagues[3] have obtained the antigens of *Bact. typhosum* and *Bact. typhi-murium*, and have shown that by growth of the organisms in a synthetic medium various sources of contamination could be eliminated. In continuing this work they have examined the chemical constitution of *Bact. typhosum* Ty2 antigen, and find that on gentle hydrolysis it may be dissociated into a polysaccharide component, an insoluble polypeptide, a soluble nitrogenous component, and a small lipid component. The polysaccharide represents the O-specific hapten of the antigen and appears to be free from ketose, pentose, and uronic acid residue, but yields *d*-galactose, *d*-mannose, and *d*-glucose on hydrolysis. An identical polysaccharide has been prepared directly

[1] *C. r. Soc. Biol.*, Paris, 1933, **114**, 307.
[2] *Brit. J. exp. Path.*, 1934, **15**, 113.
[3] *Biochem. J.*, 1940, **34**, 307.

from the dried organisms by extraction with dilute acetic acid. The polypeptide component is insoluble in water but soluble in dilute alkalis. It contains 8.2% nitrogen, partly in the form of tyrosine and arginine units, while about 50% of the total nitrogen is liberated as amino-groups on acid hydrolysis. Two other components of the antigenic complex have also been isolated, but have not yet been studied in any great detail: one is a mixture of lipins, probably fatty acids with a phospholipin; the other, a soluble nitrogenous component as yet undetermined. Preliminary work on an O-antigenic strain of *Bact. typhi-murium* has yielded similar results to those on the typhoid bacterium, while in the case of *Bact. dysenteriae* (Shiga) Morgan and Partridge[4] found that the antigen exists in the cell as a phospholipin-polysaccharide-polypeptide complex: the phospholipin component may be removed without destroying the antigenicity of the polysaccharide-polypeptide complex. These investigations naturally involve the use of relatively enormous masses of pathogenic bacteria and laborious large-scale chemical manipulations; they may, however, well constitute one of the most important advances in the treatment and prevention of bacterial disease.

[4] *Biochem. J.*, 1940, **34**, 169.

PERFECT SIGHT WITHOUT GLASSES

A letter in this week's *Journal* from Dr. J. Parness draws attention to a statement recently broadcast by Dr. Julian Huxley on the practice of correcting visual defects without the use of glasses. Before condemning such a practice it would be as well to examine the evidence in support of it. There are a variety of methods based on hypotheses of varying degrees of tenuity. The system expounded by W. H. Bates in his *Cure of Imperfect Sight by Treatment without Glasses* (New York, 1920) has the advantage over competitive systems in that its principles are publicly stated. Bates holds that the refractive state is dynamic and is constantly changing. The changes in refraction are produced by the nerves and tissues of the extra-ocular muscles, the lens itself playing no part in accommodation. Defective vision is a psychic phenomenon, affection of the brain centres first disturbing the macula and then the whole retina. Treatment aims at inducing "cerebral relaxation," for when the mind is at rest vision is normal. In thirty years' work on refraction Bates found few people who could maintain "perfect sight" for more than a few minutes at a time, and he often saw "the refraction change half a dozen times or more in a second, the variation ranging all the way from twenty dioptres of myopia to normal." As no ophthalmologist has the necessary skill and speed to observe half a dozen or more changes in refraction in the space of a second ("blitz retinoscopy," as it might be called), no one is in a position to contradict this basic tenet of Bates. And ophthalmologists still cling to the theory, based upon physiological evidence, that accommodation is brought about by the changing curvature of the lens. Bates illustrates the influence of the mind on refraction by the effect of strain. Since strain implies mental unrest, changes in refraction occur in all conditions inducing such unrest. Thus "a patient 25 years old had no error of refraction when he looked at a blank wall without trying to see [i.e., under complete relaxation and total absence of strain]; but if he said he was 26, or someone else said he was 26, he became myopic [as shown by Bates's rapid retinoscopy]. The same thing happened when he stated or tried to imagine that he was 24. When he stated or remembered the truth his vision was normal, but when he stated or imagined an error he had an error of refraction." There is also the case of the little girl who told a lie. The retinoscope revealed a change towards myopia the moment she replied "No" to the question, "Did you have an ice-cream?"; while she was giving truthful answers "the retinoscope indicated no error of refraction." This appears to be, so to say, a physical expression of the inward eye of conscience.

A queer assortment of evidence is brought forward to prove that the refractive changes in the eye are produced by the extra-ocular muscles. There is, for example, the "proof" that aphakic patients are able to read small type with distance glasses. That the daily experience of ophthalmologists is to the contrary is perhaps of some significance, though obviously not as significant as the few instances Bates records, for which, incidentally, perfectly good explanations are available, as anyone acquainted with the literature knows.[1] There is, indeed, an extensive and controversial literature on the actual mechanism whereby the contour of the lens changes during accommodation; the facts themselves are not disputed—except by Bates, who produces experimental evidence that in the fish removal of the lens does not interfere with accommodation. The fish experiment is amply illustrated by photographs, but there is no reference to the fact that accommodation in the fish is different physiologically and anatomically from that of the mammal. Mammalian experiments, mainly on the rabbit and cat, are recorded, and here the rather startling point emerges that a nerve or muscle cut across and tied up again will carry an impulse on being tied, though physiologists would not expect any such result before days or weeks had elapsed. Mammalian anatomy is also illuminated in these experiments. Apparently the standard teaching that the cat is endowed with a superior oblique muscle is not correct. It should be added that this is only an incidental observation; but that pharmacologists err in believing that atropine acts only on unstriped muscle is part of the general argument, for Bates found that this drug will paralyse the extrinsic muscles which produce accommodation. One experiment, illustrated in Fig. 23, appears to show that the dead fish still has a living mind; its brain is pithed to induce relaxation.

The treatment based on these revolutionary observations aims at mental relaxation, and the pithed fish appears to be its prototype. The Bates system of treatment seems to have many devotees, and one incident may be worth noting. In 1931 the Republican Ministry of Public Health of Prussia warned against this method as a form of quackery,[2] but in Hitlerite Germany a voluminous literature on the subject has spread the cult and there is apparently no lack of practitioners and patients.

INHERITANCE OF CEREBRAL DYSRHYTHMIA AND EPILEPSY

The work of Lennox, Gibbs, and Gibbs on the inheritance of dysrhythmia and epilepsy has already been discussed in these columns,[3] but in a recent paper[4] the authors supply further data and comment. Briefly, the electro-encephalograms of the close relatives of epileptics—parents, sibs, and children—were abnormal in 60% of cases, whereas those of relatives of a control group were abnormal in only 10%. The ratios are similar to those which would be found if dysrhythmia depended on a dominant gene, though whether the situation can be as simple as this is doubtful. Unquestionably in an undue proportion of cases of epilepsy both

[1] *Amer. J. Ophthal.*, 1921, **4**, 296.
[2] *Klin. Mbl. Augenheilk.*, 1931, **87**, 514.
[3] *British Medical Journal*, 1940, **2**, 530.
[4] *Arch. Neurol. Psychiat.*, Chicago, 1940, **44**, 115.

parents exhibit abnormal waves, so that if a single gene pair is concerned the effect of two abnormal genes must be greater than that of one alone. The authors state that of 13,262 close relatives of 2,130 sufferers from epilepsy 2.4% were epileptic. Thus, of persons with abnormal electro-encephalograms only 1 in 20 or 25 is an actual epileptic. Examining twin evidence, the authors find that the combined data of several authors show that if epilepsy is present in one identical twin it is also present in the other in 70% of cases. This clearly indicates the influence of heredity, and also the importance of hereditary factors other than the simple determination of the dysrhythmia; it shows, too, that non-genetic factors help to determine the onset of clinical epilepsy. Lennox and his co-workers made electro-encephalograms of seven pairs of identical twins, and they also describe the results obtained in nine pairs of normal identical twins. The records, whether normal or abnormal, were closely similar for the twin pairs. In two cases there were differences, due to an acquired cortical lesion in one twin, though even here the basic rhythms were still similar. A history of fainting was encountered much more frequently among the relatives of epileptics than among the relatives of the controls. Of fourteen parents with such a history, twelve had abnormal electro-encephalograms, so that a history of fainting should be viewed with suspicion, since the attacks might in reality be mild seizures or precursors of seizures. The incidence of migraine was twice as high among the relatives of the epileptics as it was among the relatives of the controls, but the electro-encephalograms of migrainous parents were not more often abnormal than those of non-migrainous parents. Abnormal waves can on occasion be due to acquired causes. The case is quoted of a patient with adenoma of the islets of the pancreas with recurring periods of coma; the dysrhythmia disappeared a year after successful pancreatomy. The authors conclude that in the absence of epilepsy abnormal rhythm is to some extent associated with other abnormalities. An undue proportion of problem children have abnormal waves; this is found too among schizophrenics; and there also seems to be an association with slight personality difficulties. Many persons with abnormal waves, however, appear to be normal in every respect. The authors suspect that degrees of abnormality are heritable but have not sufficient data for dogmatism. The incidence of abnormal waves is the same among the relatives of both "symptomatic" and "essential" epileptics. A practical eugenic point is that a person with cerebral dysrhythmia will be much less likely to have an epileptic child if he marries someone with normal brain waves.

INDUSTRIAL EYE INJURIES

A recent issue of the *Journal of the American Medical Association* (March 29, 1941) is devoted to industrial health, and contains four articles on ocular hygiene and industrial injuries. In many ways safety devices are more advanced in the U.S.A. than here, and there is certainly a greater awareness of the problems involved than is to be found in this country among both employers and employees. There are approximately 300,000 injuries to the eye in American industry each year, and their cost to the nation is in the region of $60,000,000 annually. Intensive investigations have shown that the largest percentage of injuries occur in the machine-tool, foundry, and metal-products industries, and the loss of industrial efficiency in these basic industries at the present moment is of special significance. American records reveal an unexpectedly high incidence of visual defect in the industrial population as a whole, an incidence that increases in the higher age groups. Admittedly there is no recognized standard of the necessary visual efficiency in the various industries, but such defects as 21% in visual acuity and 22% in muscle balance represent departures from a theoretical ideal and not necessarily from any valid standard of industrial efficiency. Systematic ophthalmic examination is recommended for the fairer assessment in cases of subsequent injury and for the selection of entrants to industry, with a view to reducing the incidence of accidents. These considerations emphasize that the use of goggles is not the beginning and end of preventive measures. None the less their value can hardly be exaggerated, and an educational campaign to popularize their use has apparently gone much further across the Atlantic than here. Certainly some of their safety slogans might well be adopted. They range from a poetical plea ("The light of the whole world died in a shower of sparks") to a concealed intimidation ("We once knew a man who could not see the need for wearing goggles—now he can't see the goggles").

TRIBUTE TO THE NURSING SERVICE

On the second anniversary of the outbreak of war the Overseas League gave a luncheon in honour of the "Nurses of the Empire," at which the principal speaker was Mr. Ernest Brown, M.P., Minister of Health. Mr. Brown said that various problems concerning the nursing profession were exercising him and his advisers, and as an indication of the importance they attached to their responsibility for nurses a separate Division had been created at the Ministry. Some steps had already been taken with regard to nurses' salaries (as recorded in our last issue at p. 344), and other matters were under consideration. So many demands were being made on the services of women that the vital need of the nursing services might possibly be overlooked, but wherever else there was a shortage there must be no shortage here. The Minister rightly insisted that it was not enough to have a sufficient total of nurses: what was required was to have the proper numbers at the right time and in the right place. He paid a glowing tribute to the work of nurses in the war, mentioning that of 32 George Medals awarded to women, nurses had received 17. The Army nurses had shared to the full the rigours of the first winter of war in France, the evacuation, and the stress of subsequent campaigns in Greece and elsewhere. He also referred to the help of nurses from the Dominions, 23 of whom were present at the luncheon, and of Red Cross workers from Allied countries. A further short speech was made by the matron of St. Thomas's Hospital, who had lent for the occasion the hospital's statue of Florence Nightingale, which, with a lamp burning in front of it, graced the head table. The luncheon was presided over by Sir Jocelyn Lucas, M.P., chairman of the Welcome Committee of the Overseas League, and among the guests were 130 matrons of hospitals in and around London, and nine nurses of the Harvard unit and six of the Wilson unit of the American Red Cross, together with four of the American Ambulance, Great Britain. Nurses who had received decorations for war service—or as many of them as could be persuaded to show themselves in public—were introduced to the gathering.

Sir Thomas Barlow celebrated his ninety-sixth birthday on September 4. Our readers will be pleased to know that he is still up and about and warmly appreciative of the good wishes of his admirers.

NORMAL AND PATHOLOGICAL SPECIMENS OF THE EAR, NOSE, AND THROAT IN THE ROYAL COLLEGE OF SURGEONS, LONDON

Although known and valued by E.N.T. workers, it has hardly been appreciated generally that London possessed perhaps the largest and most valuable collection of museum specimens illustrating the surgery of the ear, nose, and throat.

The Museum of the Royal College of Surgeons has been for many years assembling a select number of pathological, anatomical, and physiological specimens concerned with this specialty. One of its earliest gifts of normal anatomy was received when Toynbee presented his 300 specimens of the anatomy of the temporal bone. This addition was, later, greatly enriched when Arthur Cheatle handed over to the Museum his unrivalled series af sectioned temporal bones. The basis of the group of specimens related to rhinology was formed when the large collection of Onodi, from Budapest, was secured and presented by the oto-laryngologists of this country. A valuable addition to the laryngological section of the Museum was made when V. E. Negus presented the specimens forming the foundation of his classic study on the comparative anatomy and physiology of the larynx. This last addition escaped damage when the Museum suffered considerably during London's bombardment by the Germans in May last.

Owing to the dispersal, for greater safety, of the specimens then undamaged it has not yet been possible for the College authorities to compile and publish a complete and accurate statement of the loss to medical science suffered by the Museum from enemy action. So far as specimens relating to E.N.T. are concerned the following information has been made known:

The catalogues of the Museum have been preserved, and it will be possible in the future to reproduce many specimens of normal anatomy from fresh material. The Onodi collection of the anatomy of the nose and accessory sinuses was heavily damaged, but about 95 specimens are intact and the others, being of normal human anatomy, can in time be replaced. The Toynbee and Cheatle collections have suffered even more severely. It is to be hoped that after the war young aural surgeons will be forthcoming to re-establish the Toynbee and Cheatle series of temporal bones. As to the pathological specimens, it is not possible to give a full report at present.

It is interesting and comforting to recall that the fourteen specimens of the anatomy of the paranasal sinuses, recently presented by the late Professor Hajek, are intact and complete. Professor Hajek was able to escape from Vienna about two years ago, and, with the generous help of American and British colleagues, he reached London with his devoted wife—a sister of the well-known dramatic writer Schnitzler. Here, by the help of his confreres, he was able to spend the last two years of his life in modest but comfortable conditions and in the enjoyment of the liberty which he so much appreciated. When he made his escape from Vienna he was only allowed to bring with him, in money, the equivalent of ten shillings. He and his wife had to produce and leave behind their gold watches. The only pieces of gold they were allowed to export were their wedding rings. In spite of these difficulties he managed to bring away with him fourteen specimens of his valuable collection of rare irregularities of the anatomy of the nasal sinuses. The rest of his 150 specimens had to be left in Austria. These fourteen formed part of the specimens which he had shown, during nearly fifty years, in the practical classes which the American editors of his well-known book[1] deservedly called "famous." They are illustrated in that work, which these translators of the English edition referred to as "a recognized classic."

As a token of his gratitude for his deliverance from the city where he had so long been one of the most esteemed teachers in the Faculty of Medicine, and for the welcome he had received in London, Hajek presented these valuable specimens to the Royal College of Surgeons through Mr. T. B. Layton, cataloguer of the Onodi Collection. It is one of life's ironies, and it is a comfort to remember, that when the German bombs were doing so much damage to the science and teaching of surgery in London they missed some of the most valuable specimens in oto-laryngology, which had come originally from Vienna and Budapest.

STC. T.

[1] *Nasal Accessory Sinuses.* In two volumes. London: Henry Kimpton. 1926.

Local News

NEW ZEALAND

[FROM OUR CORRESPONDENT IN WELLINGTON]

Hospital Control: The Burden of Cost

The possibility of an alteration in representation on hospital boards in the event of the Government's finding a greater share of hospital costs has been mentioned by the Minister of Health in the course of a discussion with board members. Rating expenditure has become a matter of great concern to hospital boards, and various aspects of the position have been put to the Minister in the hope of relief. It has been represented to him that boards are not nearly so well off as had been expected as a result of the payment by the Health Department of six shillings per occupied bed per day under the Government Social Security Scheme. The rise in cost has completely wiped out any advantage (6s., as against 3s. in fees collected previously). A result is that increased levies have to be made on contributing local bodies. The Minister in reply has stated that officers of his Department are now working on a scheme to provide relief for some of the hospital boards. A great deal of thought, he said, must be given to the problem, and if the system is to be changed all the factors must be considered.

A National Problem

The Minister was asked if it was possible with any change in the system of rating that hospital board administration might be taken out of the hands of local bodies. He said in reply that he agreed with some form of local control because that was democracy; further, he added, if the Government was expected to find higher and higher amounts for hospitals there would need to be more State control. In his opinion, a large measure of departmental administration for the boards could be accomplished without any disservice to local bodies. The Minister said he realized that boards were alarmed at the increase in cost. In the matter of expenditure some boards had reached their peak and could not reasonably ask the ratepayers to find more money. When there was desperate need for accommodation with all room taxed heavily the time had come to recognize that it was not a local but a national problem and that it became necessary to rearrange the hospital rating system. The Minister explained that, so far as he knew, it was not intended when the Social Security Scheme was being prepared that the contribution of 6s. per head per day should be fixed and static for all time. The problems facing some boards would be looked at along with other proposals to meet a serious position. Regarding capital costs, where the burden on local ratepayers was such that they could not be asked to find the money locally, in his view the charge should become a national responsibility, but the actual details would require a lot of thought. It was also explained by the Minister, in discussing the matter with one of the hospital boards, that with capital expenditure the Government's contribution was £1 for £1, while for maintenance there was a fluctuating

amount, boards which were very highly rated being given a higher scale of subsidy. The Social Security contribution was an addition and the Social Security Scheme also found money for outpatient treatment and for maternity costs. It seems that the Government's contribution may go as high as 75%. It should be understood that an additional grant of 5s. per bed is made for soldier patients, which is, of course, far below the cost of treatment and maintenance.

The Last Word and the Last Straw

For many years the principle of hospital finance in New Zealand has been considered by optimistic people to be not only static but ideal and a model for other countries. The principle of this system has been in effect that the general Government taxation provided about half of the cost and the rest was paid by ratepayers. There seemed little moral obligation on patients under this system to pay for their maintenance and treatment out of their private purses, and only an amount of approximately 3s. a day per head was collected from patients. This amount seems very low seeing that any person, rich or poor, has the right to receive treatment in these tax- and rate-supported hospitals. The Social Security tax amounts to 1s. in the pound on all wages and incomes and commercial profits, and this proves quite insufficient. To make up the balance nearly four million pounds had to be drawn from general Government revenue last year. No medical practitioner service has been provided owing to opposition from doctors who decline to be "nationalized" under the conditions proposed by the Socialist Government. All medicines except proprietary medicine have lately been made free for both hospital and *private* patients, and all hospital treatment is free. The result of all this has been that the number of patients in hospitals throughout New Zealand has increased alarmingly, out of all proportion to any increase in population. Thus, State control has not been an unqualified blessing and has created new difficulties of a grave order, especially when the chief task of the country is the prosecution of the war effort. Any further increase in the huge burden of hospital costs will suggest to the minds of many people the time-honoured story of the last straw that broke the camel's back.

Correspondence

Penicillin

SIR,—Your annotation on penicillin (August 30, p. 310) is very welcome to me, who in 1929 discovered and named this very potent substance produced by a certain type of penicillium. It is true that all the work on this substance originated in the accidental contamination of a culture plate with a spore of this penicillium, and in my first paper on the subject a photograph appears of this culture plate. (Incidentally, this culture plate still exists.) I think, however, I can claim some merit in the discovery, as without a doubt the same mould has contaminated hundreds or thousands of culture plates and has merely been regarded as a nuisance.

There are many species of penicillium, and, at first, on the advice of a mycologist then attached to our laboratory at St. Mary's Hospital, it was referred to as *P. rubrum*. It has since, however, been examined by other experts in Europe and America, and the known species to which it has the closest affinity is *P. notatum*, although the type culture of *P. notatum* does not produce penicillin.

I do not think that you quite do me justice when you say that, although penicillin was used at St. Mary's and elsewhere as an ingredient of selective media, it "does not appear to have been considered as possibly useful from any other point of view." In my first paper on the subject in 1929 I made observations on its antiseptic properties against many species of bacteria, on its toxicity to leucocytes *in vitro*, and on its toxicity to animals. I showed that the simple unconcentrated culture could, even when diluted some 800 times, inhibit the growth of pyogenic cocci, while it was no more toxic to leucocytes or animals than the broth in which it was grown. I had previously, in 1924, shown by the slide-cell technique that all the antiseptics in common use had a much greater inhibitory effect on leucocytes in human blood than they had on bacteria, and until I found penicillin there was not a chemical antiseptic which by this simple *in vitro* test could be considered as an antiseptic of the first class for the restriction of growth of bacteria in human tissues. This led me in my original paper in 1929 to allude to the possibility of the use of penicillin as an antiseptic, and paragraph 8 of the summary of this paper reads: "It is suggested that it may be an efficient antiseptic for application to, or injection into, areas infected with penicillin-sensitive microbes." In a later paper, on "Some Problems in the Use of Antiseptics," published in the *British Dental Journal* in 1931, I discussed the possibility of the use of penicillin as a surgical antiseptic and made the following statement: "Penicillin is valuable to us at present in the isolation of certain microbes, but it is quite likely that it, or a chemical of similar nature, will be used in the treatment of septic wounds."

These extracts from my papers show that wider uses for penicillin than selective culture media have been envisaged from the beginning, and the last quotation indicates that ten years ago I had concluded that the practical application of penicillin in surgery depended on the chemist who could isolate the active principle and manufacture synthetically this or an allied compound.

Prior to the second article cited (1931), a few tentative observations had been made on the effect of the local application of the unconcentrated culture to septic wounds (chiefly carbuncles and sinuses). Although the results were considered favourable there was no miraculous success. In those times septic wounds in the hospital wards were relatively uncommon, and it was not considered that the production of penicillin for the treatment of these was practicable, owing to the lability of the active principle in solution. The lability of the active principle is still a stumbling-block, but the Oxford workers have to some extent overcome it by extracting an impure active agent and keeping it in the dry state. This great advance has enabled a clinical trial to be made which has more than justified the suggestions I made ten or more years ago.

I have shown (*Proc. roy. Soc. Med.*, 1941) that dried penicillin, with which the Oxford workers kindly provided me, is many times more powerful than the most potent of the sulphonamide compounds. Penicillin does not appear to belong to the sulphonamide group, and if the active principle could be isolated in the pure state, and if its constitution could be ascertained, it would lead to the production of another series of chemotherapeutic agents which may well replace sulphanilamide and its derivatives in medical practice.—I am, etc.,

St. Mary's Hospital, W.2, Sept. 1. ALEXANDER FLEMING.

Planning for Mental Health

SIR,—Some interesting points are raised by the report of the B.M.A. committee on the handling of problems of mental health and illness (August 23, p. 276). On the incidence of mental illness, for instance, one fallacy seems to be current, and from your note even the committee does not seem to have avoided it. It is said that "the incidence of mental illness is difficult to ascertain," and the witnesses apparently gave discrepant assessments and have not much helped the committee.

May I suggest the reasons for this apparent discrepancy. On analogy, compare mentally ill people with physically ill people. The physically ill fall roughly into two classes: those who are chronically or permanently ill and those (constituting the vast majority of normal or at any rate average people) who have intercurrent or occasional illnesses. Not one of us has had no physical ailment, serious or trivial, at some time or another; yet we do not consider ourselves as diseased. The nervously or mentally ill (the word "mental" has an unfortunate connotation in that to most people it implies insanity or psychosis—"maladjustment" would be a more suitable word) fall similarly into two classes. On the one hand are those who have become chronically neurotic or psychotic or who are constitutionally mental defectives, and on the other are the vast majority of us who at some time or another have had or will have nervous complaints and temporary maladjustments—that is, minor depressions, spells of acute anxiety, serious sexual, personal, marital, economic, or

other problems, or problems arising from somatic disease or accident.

One cannot legitimately speak of the incidence of mental illness (if by "mental" is not merely meant psychotic). One may, of course, speak of the incidence of certifiable lunacy or deficiency, but surely not of the maladjustments, which we all have at one time or another, just as we all have physical ailments sooner or later. It seems to me rather important to discard the impracticable concept of two classes of people: the mentally ill and the mentally well.

Psychological problems arise at every stage of our lives: the weaning of the infant from the breast and from infantile excretory habits; the weaning from the home when school demands it; the sexual problems of the adolescent, the young unmarried, those about to be married, and those recently married; marital problems and the weaning of the mother from her children when they must leave home; the problems of involution and bachelorhood; the problems of ageing and ill people, which are not sufficiently realized; the problems that arise during and after physical disease or accident. All these are minor problems when they first arise, but the physician who fails to make a distinction between those permanently ill and those mentally perplexed may fail to treat the latter. Problems which might easily be solved or prevented even by one or two interviews may graduate into chronic and permanent mental illness. To raise the question of the incidence of mental illness tends to confuse the problem by over-simplification. A multiplicity of factors are involved. The problem primarily is not one of treating neurotic people, but of treating the neurotic disturbances of the population at large.

The definitions of "psychotherapist" and "psychiatrist" are neither clear nor illuminating. In practice, the former seems to be applied to those who treat the psychoneurotics and the latter to those who diagnose the psychotics. The term "neuropsychiatrist" might be a better one, because one cannot help one type of maladjustment without experience and knowledge of the others. Moreover, the medical psychologist must have some skill in the somatic aspect of disease, especially in neurology. The "pure" neurologist who disdains psychiatry need not, of course, have this wider knowledge; unlike the neuropsychiatrist he diagnoses often, treats much, but cures seldom.

I suggest that psychological medicine should be integrated with the rest of medicine and not be "psychically isolated" from it. The basic medical syllabus should include side by side: medicine, surgery, obstetrics, and psychological medicine. The doctor—whatever his function or specialty—is expected to know something of minor medicine, minor surgery, and even of minor obstetrics—and to know when to refer the major cases to the specialist. As there is a psychological factor in every ailment, he must not be allowed to shirk his responsibilities where the mentality and problems of the patient influence—or can influence—his trouble.

Many doctors even now are apt to deride the medical psychologist: accusing him of theorizing and of poor results, and of disagreeing within his own tribe. If they would only spend one morning in a busy out-patient psychiatric clinic they would realize, first, that competent psychiatrists differ no more in their actual practice than one general practitioner differs from another. All of us have our pet foibles and fads and skills; practitioners of widely different schools treat cases in very much the same way. And the good psychiatrist wisely commits himself to no theoretical school; the warring of psychological sects has now largely ceased, except among the verbally minded. Secondly, he would realize that it is very easy to get good results where the general practitioner sends a case in time; and that even in neurotics of long standing the results can be good. But a common fallacy must be realized: it is no more possible to "cure" a constitutional nervous illness than it is to cure a hereditary physical illness. It can be alleviated so that life is tolerable, unless the case is sent far too late. For some reason the non-psychiatrist demands of the psychiatrist a radical cure where he would not think of demanding it of himself, and sends his lunatics for cure and is righteously indignant when this is not possible.

My points may not all have been immediately relevant to the committee's report, but that they can have some bearing on the medical profession's reaction to that report I sincerely hope.—I am, etc.,

Bridge of Earn, Perth, Aug. 23. HENRY HARRIS.

SIR,—The B.M.A. Committee's report on this subject, as epitomized in your issue of August 23 (p. 276), gives one furiously to think. Is it not clear that unless this topic be considered in its widest bearings, mental and moral "inadequacy" will continue to spread not only in this country but all over the world? I beg to touch upon one important aspect which has apparently not come under the purview of the committee in question. May not the increasing psychological ill-health with which the present generation is faced be related to the peculiar sociological problem which is also now daily pressing itself on our notice—namely, the war? In short, is not Western civilization now breaking up by a process strongly suggestive of suicide; and, if that be so, should we not consider the psychological break-up merely one aspect of the general process—complicated, of course, by the usual phenomena of vicious circles, effects becoming themselves causes and so leading to ever more deeply growing confusion? Under such circumstances how should we expect to find sanity ruling or extending its sway in the affairs of daily life? *Quis custodiet ipsos custodes*? The time will come for our pundits to start teaching "mental and moral hygiene" when they have themselves arrived at general agreement on its first principles (as distinguished from some of its symptoms).

I will end with a single practical suggestion. I personally believe the source of the whole trouble to be the break-up of family and local life. Ever-increasing centralization, with its inevitable accompaniment of bureaucracy—that is, rule by the impersonal machine—is not only playing ducks-and-drakes with our Western civilization; it is actually promoting insanity.—I am, etc.,

Inverness, Aug. 26. A. J. BROCK.

Bacteria from Wounds Enclosed in Plaster

SIR,—In the *Journal* of August 23 (p. 268) Dr. H. L. de Waal describes an ingenious method of taking bacteriological samples from wounds enclosed in plaster, and severely criticizes the method described by us a short time ago (*Journal*, 1941, **1**, 877). We should hesitate to criticize Dr. de Waal's method without a thorough trial had he not done this to us. If he had tried our method and our apparatus he would have found that oedema does not occur; nor does granulation tissue grow into the base of the cylinder. But apart from any actual trial, since the base of the apparatus lies flush with the inner surface of the plaster and is completely closed it is difficult to see why oedema should occur and easy to see that penetration by granulation tissue is impossible. It seems that the type of window he describes as suffering from these defects is not ours, but one previously used by himself and discarded. When the window is properly applied samples obtained through it are indistinguishable from those obtained from other parts of the wound. Many of our observations were made on wounds without windows. Their flora, observed at changes of plaster, did not appear to differ from those with windows; nor did the removal of a window from a given wound or its insertion appear to influence the quality of the samples obtained. We conclude from this evidence that the bacterial flora at the base of the cylinder is representative of that in other parts of the wound.

As to his recommended procedure, we see many virtues in it and some possible vices, the reality of which could only be proved or disproved by experience. For example, the thread in being withdrawn has to be dragged, according to the diagram, across an intact skin surface which would presumably be coated with discharge in which irrelevant saprophytes would be pullulating. Incidentally, this dragging might well be considered surgically undesirable as disturbing granulation tissue, especially in the early stages of healing. Again, the thread itself, like a dressing, constitutes a system of minute stationary locules of decomposing discharge, and may well be rich in microbes which are scanty on the actual wound surface. We found in the early stages of our work that if gauze dressings were put under the window our samples from the outside of the dressing were not representative, and we corrected this in the later part of the research.

As to the chances of secondary infection through the two types of window, Dr. de Waal alleges that ours is risky and implies that his is not. In theory there is not much to choose between the two in this respect, though we prefer ours; but in

practice we have published evidence that ours does not give this trouble, whereas his claims are unembarrassed by any documentation.—We are, etc.,

JEAN ORR-EWING.
A. D. GARDNER.
J. C. SCOTT.

Sept. 2.

Puerperal Tetanus

SIR,—I am interested in the paper on puerperal tetanus by Drs. Bruce Maclean and P. Challen (August 30, p. 302). In the case of puerperal tetanus which I described in the *Chinese Medical Journal* (1928) I stated I could not find any record of a similar case in China, but tetanus neonatorum was very common in parts of the province (Fukien, South China), due, I am sure, to the custom of the native midwives using earth to dress the cord. The infant mortality was, of course, extremely high.

I hoped my report might bring records of other cases in different parts of China, but only one reply came in from South China later. In South India I had a case of severe puerperal tetanus brought in on the fifteenth day of the puerperium. The woman had been delivered by a native midwife.—I am, etc.,

Ipswich, Sept. 1. L. H. H. BYRNE.

SIR,—Drs. Bruce Maclean and P. Challen, in their interesting report of this rare complication, suggest that the infection might have originated from the rectum or possibly from the perineal suture material. As the latter was silkworm gut they might be interested in the Tetanus Committee's report in the *Journal of Obstetrics and Gynaecology of the British Empire* for June, 1941, on the anaerobic infection of vulval pads, on the reinfection of cotton-wools and cellulose tissues after sterilization in manufacture, and on the difficulty of eliminating spore-bearing organisms unless an absolutely rigid technique of sterilization is followed. The committee's report gives some valuable information on the sterilization of all dressings, and paras. 2 to 5 (pp. 396-400) are of much general interest.—I am, etc.,

Minera, near Wrexham, Sept. 4. R. OWEN-JONES, F.R.C.S.Ed.

Routine Radiography of Students' Chests

SIR,—I was interested to read the letter from the secretary of the British Medical Students' Association (August 23, p. 279), in which recognition is made of our scheme for the regular *x*-ray examination of our students' chests. This scheme has proved most successful in the detection of early cases of pulmonary tuberculosis, and hence, presumably, in the prevention of frank cases of the disease. It has been eagerly accepted by our students, and it is not surprising to find that there is now a demand for its general introduction at other schools.

There is, however, one point in Miss Tinker's letter which requires correction. The *x*-ray scheme as run at University College Hospital was conceived and originally established and financed entirely by this medical school out of its own funds. Since, however, the Prophit investigation of the Royal College of Physicians was commenced, the two schemes have been run in co-operation, and we are very grateful for the assistance which we have received from the Prophit Scheme.

The routine *x*-ray examination of students' chests may prove to be the beginning of a wider organization of students' health services.—I am, etc.,

GWYNNE WILLIAMS,
University College Hospital, London, W.C.1. Dean.

Recovery from Crush Syndrome

SIR,—Your annotation on recovery from crush syndrome (August 30, p. 311), in which my article on the same subject (*Journal*, August 9, p. 197) is mentioned, leads me to correct a misprint in the chart of the latter: "30 grammes sodium citrate" should have read "30 *grains*." I wish also to add the fact, interesting in view of the article by Longland and Murray (*Lancet*, 1941, **2**, 158), that in my case the urine remained acid for twenty-three days after admission and for eleven days after the administration of citrate had begun. This observation and others were included in the original draft of my report, but were excluded from the final copy to satisfy the exigencies of space.—I am, etc.,

Carluke, Lanarkshire, Aug. 31. RONALD G. HENDERSON.

Rupture of the Drumhead as a Wartime Injury

SIR,—Points in Dr. A. B. Alexander's paper on "Rupture of the Drumhead as a Wartime Injury" (August 9, p. 195) aroused my special interest. He mentions that over 50% of cases due to blast injury seen by him were infected. A short time ago I had the opportunity of inspecting a considerable number of ruptured drumheads in naval personnel. Over 80% of these cases healed without infection. Those that failed to do so had either suffered immersion after reception of the blast injury, or had received drops in the ears previous to admission to hospital. Drops should never be inserted into a dry ear with a traumatic rupture of the membrana tympani. Unfortunately, this is not always realized, and drops are prescribed from a mistaken but praiseworthy desire to do something.—I am, etc.,

D. BROWN KELLY,
Aug. 24. Surgeon Lieut., R.N.V.R.

Case of Shock from Burns

SIR,—Drs. R. T. Grant and E. B. Reeve (August 30, p. 293) describe examples of traumatic shock in which the blood pressure is raised, but in their nine cases the pulse rate remained comparatively slow, never rising above 92. A case of burn shock in which the blood pressure was high and the pulse rapid recently came to my notice and its features seem to be worth recording.

A pantry-maid aged 18 was admitted to hospital at 1.30 p.m., suffering from extensive second-degree burns of the back, thighs, and forearms. She was seen forty-five minutes after the accident, and appeared clinically to be severely shocked—pale, sweating, mentally alert, with a temperature of 97.2° F. and a pulse rate of 144. The blood pressure was 150/110. She was treated in the first instance by sodium bicarbonate compresses, morphine, and warmth. At 2.30 the blood pressure was still 150/110; at 4.0 it was 130/110 and the pulse 152; by 5.45 the blood pressure had dropped to 95/40: 900 c.cm. of plasma was then administered and the blood pressure rose to 130/90, the pulse rate being 128. At 8.0 the blood pressure had again dropped to 90/50: 450 c.cm. of plasma and 900 c.cm. of plasma-saline were given in thirty minutes and raised the blood pressure to 125/80. It was then considered that she was fit for treatment of the burnt areas, which was carried out under ether anaesthesia eight hours after admission.

The normal blood pressure, determined from the mean of several readings during convalescence, was 115/70.—I am, etc.,

Liverpool, Sept. 7. WILLIAM M. BEATTIE, F.R.C.S.

Voluntary Hospitals

SIR,—Sir Frederick Menzies (September 6, p. 353) goes to the root of the matter in asking: "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" Your correspondent, Dr. E. Montuschi, on "Group Practice or Bureaucratic Medicine" (*Supplement*, September 6, p. 41) gets down to essentials also when he states that: "The last [national organizations] are concerned with broad issues of policy, the regional with the more concrete problems of organization, and the local with the living practice and execution of the demands for which the system came into being. For these demands are, in ultimate, the demands of human beings living diversely, in different places and in differing environments."

It is of importance that there should be some clear understanding of the difficulties confronting those who must soon face the problem of a reorganization of the health and hospital services of the nation. For the greater part of my life I have served in the dual capacity of a medical administrator—dealing with the concrete problems of organization—and as a practising physician (albeit a specialist) in intimate contact with personal demands of living human individuals. For the last two years I have observed with interest the working of what amounts to a voluntary hospital, uprooted and transplanted by the war, within the framework—indeed, the very walls—of the local authority hospital of which I still remain "in charge." After this experience I feel I may usefully attempt to give my answer to Sir Frederick Menzies's question.

One of the better features of the voluntary hospital is the feeling of independence and personal responsibility for their work and the welfare of their patients which the senior staff have and in consequence the loyalty which juniors accord them. Such is

not precluded by the municipal hospital organization and may be found, but its free existence is not securely provided for. On the other hand, I am equally sure that "problems of organization," more particularly between different hospitals or groups of hospitals, are more effectively secured in a municipal service. Those brought up in a voluntary hospital *milieu* are apt to be intolerant of the control which an "efficient organization" should exercise. This no doubt arises from a fear, not without some justification, that effective organization may mean only inefficient interference.

A satisfactory system, I believe, must ensure a clear-cut separation of the functions of the policy-making central powers, of the local organizing authority, and of the practising executive, and secure independence for each within its own field. Let me add that, while the functions of each should be distinct and separate, the working of the scheme will be helped by suitable individuals acting in more than a single sphere.—I am, etc.,

St. Albans, Herts, Sept. 6. W. J. T. KIMBER.

Remedy for Defective Sight

SIR,—In a recent radio programme of the series entitled "Any Questions" a question was submitted as to the possibility of remedying defective eyesight without the use of spectacles. In dealing with this question Prof. Huxley stated that there was such a treatment but he was unable to give details about it. In the next programme of "Any Questions" Prof. Huxley took occasion to make a special announcement to the effect that he had now ascertained that this form of treatment was practised in this country by . . . . who had written a book on the subject entitled . . . . and also by . . . . who had written a book entitled . . .

One would wish to inquire whether this method of treatment has been approved by the leading ophthalmologists. Also whether it is to the advantage of the public to have this form of treatment propounded to them in this way.—I am, etc.,

Manchester, Aug. 11. J. PARNESS, M.B.

*** Dr. Julian Huxley informs us that he had done no more than state that there were practitioners of these methods in this country (not mentioning any names), and that there were two books on the subject—namely, *Normal Sight without Glasses*, by Dr. W. D. Bates, and *Perfect Sight without Glasses*, by H. Benjamin. Dr. Huxley also tells us that he has personal knowledge of one case in which improvement of sight had been obtained in a patient treated for thirty years by other methods without success.—ED., *B.M.J.*

The Services

NAVAL AWARD

In a *Supplement* to the *London Gazette* dated August 19 the name of Surgeon Commander Edward Heffernan, R.N., was misspelt. He has been awarded the O.B.E. for bravery and devotion to duty in boarding a burning merchantman during an enemy air attack.

MENTION IN DISPATCHES

Surgeon Lieut. Harry Winston Gothard, R.N.V.R., has been mentioned in dispatches for courage and devotion to duty when H.M.S. *Southampton* was lost.

EFFICIENCY DECORATION, TERRITORIAL ARMY

The Efficiency Decoration of the Territorial Army has been conferred on Colonel A. R. Laurie, Lieut.-Cols. D. W. E. Burridge, T. E. A. Carr, W. A. Ramsay, and A. B. Williamson, and Majors (Temporary Lieut.-Colonels) A. S. Pern and R. O. Townend, R.A.M.C. (T.A.).

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Prisoner of War

Surgeon Lieutenant-Commander William Greaves, R.N.

ROYAL ARMY MEDICAL CORPS

Wounded

War Substantive Captain Henry Charles Ashley Harris.

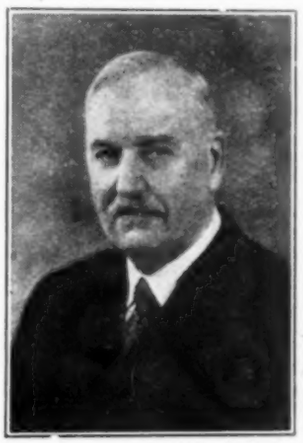
Obituary

HERBERT SPENCER, M.D., LL.D., F.R.C.P.

Consulting Obstetric Physician, University College Hospital

The death of Dr. Herbert Spencer on August 28 breaks one more link between the *British Medical Journal* of former days and University College Hospital. Like T. W. P. Lawrence—pathologist, linguist, and anatomical draughtsman—he became acquainted there with Sir Dawson Williams, and formed a lifelong friendship with both. Many of his writings, obstetrical and historical, appeared first in these columns, and his wide and varied knowledge was always at the *Journal's* disposal for the benefit of readers. He had been a member of the Association for fifty years.

Herbert Ritchie Spencer was born on January 16, 1860, at Atherstone, in Warwickshire, the second son of Henry Spencer. He had a good classical grounding at Atherstone Grammar School and went on in 1879 to study medicine at University College, London, qualifying M.R.C.S. and L.S.A. in 1883. A year later he gained honours in the Final M.B., B.S. examinations of London University, and proceeded to the M.D. in 1886. The foundations of his life-work were laid by Sir John Williams, then teaching at University College Hospital and at the height of his fame as an accoucheur. After holding the post of assistant in the midwifery department Spencer was elected assistant obstetric physician to the hospital in 1887. He was given the title of Professor of Obstetric Medicine by University College in 1893, and remained on the active staff until 1925. In the middle of that long period of service he held high office in his branch of the profession—President of the Section of Obstetrics and Gynaecology of the British Medical Association in 1905, President of the Obstetrical Society of London in 1907, and President of the Obstetrical and Gynaecological Section of the Royal Society of Medicine immediately after the amalgamation. He gave the Lettsomian Lectures before the Medical Society of London in 1920 and presided over that society three years later. In 1924 he was chosen as Lloyd Roberts Lecturer and took as his subject "The Renaissance of Midwifery," which he illustrated with a wealth of information about early books and their authors.



He became a Fellow of the Royal College of Physicians of London in 1899, was examiner in midwifery for four years, served on the Council of the College in 1917-19, and delivered the Harveian Oration in 1921 and the FitzPatrick Lectures in 1927. He had also examined in midwifery and diseases of women for the Universities of Oxford, Cambridge, and London. Academic distinctions of which he felt justly proud were honorary Fellowship of the American Gynaecological Society, of the Obstetrical Society of Edinburgh, and of the Società Medica Chirurgica of Bologna; honorary membership of the Société d'Obstétrique et de Gynécologie de Paris, and of the Société Belge de Gynécologie et d'Obstétrique; and an honorary doctorate of the University of Aberdeen.

Spencer revered the name of William Harvey and never lost an opportunity of paying homage to the man and his work. He took a keen interest in the project for restoring the tower of Hempstead Church in Essex, where Harvey's remains are deposited, and was from the beginning a member of the Harvey Memorial Committee. His Harveian Oration in 1921, the first to be delivered by an obstetrician for fifty years, dealt with "Harvey as Obstetric Physician and Gynaecologist," and came as a timely reminder that Harvey was the author not only of

an immortal book on the circulation of the blood but also of a great book on the reproduction of animals. How great and real was Harvey's knowledge of midwifery the Orator had no difficulty in proving. His FitzPatrick Lectures on *British Midwifery in the Seventeenth and Eighteenth Centuries* were the outcome of many years of research and laid before the profession a fine chapter of British scientific progress and discovery in the obstetric branch of medicine. Printed in book form soon after their delivery they stand as a permanent contribution to the history of medicine, with many curious sidelights on the old English obstetricians. In 1928 Spencer was elected President of the Section of the History of Medicine of the Royal Society of Medicine, and in 1929 he gave an address on medicine in the days of Shakespeare. His writings on the practical side of his specialty included books on *Caesarean Section*, and on *Tumours Complicating Pregnancy, Labour, and the Puerperium*, the latter being an amplification of his Lettsomian Lectures published seriatim in the *British Medical Journal*. Thirty years ago he shared with T. W. P. Lawrence the task of preparing a descriptive catalogue of the specimens illustrating gynaecology and obstetrics in the museum of University College Hospital. Among the good causes that appealed to his nature was the Royal Medical Benevolent Fund, of which he was a vice-president and member of the Committee of Management.

A man of large physique, with commanding eye and resonant voice, Herbert Spencer liked company and was a familiar figure at medical gatherings in London. His forthright speech proclaimed the firmness of his opinions. He read much and delighted in old books; travelled abroad and made a collection of lacquer ware and other objects of art; greatly enjoyed a day's shooting or fishing or bird study; and was a judge of wine and food. Advancing years and the coming of war cut him off from some of those pleasant pursuits, and the deaths of old friends one by one left him rather a lonely man, for his friendship, not lightly given, was very staunch. Our portrait, reproduced from a photograph by Lafayette, shows H. R. S. as many of us like best to think of him—in jocular mood.

We regret to announce the sudden death, which took place on August 27 in Kenya at the early age of 25, of Dr. DAVID HUGH MANSON-BAHR, second son of Sir Philip and Lady Manson-Bahr and grandson of the late Sir Patrick Manson. Hugh Manson-Bahr was educated at Rugby and Trinity College, Cambridge, and after taking his B.A. went on to the London Hospital. He qualified M.R.C.S., L.R.C.P. in 1940 and undertook the course at the London School of Hygiene and Tropical Medicine, obtaining the D.T.M.&H. early this year; also his Cambridge M.B., B.Ch. He entered the Colonial Service with the idea of serving eventually with the Colonial Forces in East Africa, but he was cut off within a few weeks of arriving in Kenya. He was good at all games and specially prominent at rugby football, playing for his hospital and the United Hospitals team. He was fond of outdoor sport of every kind, and was a skilful and ardent falconer and a member of the Falconers' Club. His untimely death cuts short a career of much promise.

Medical News

The Right Hon. Sir Earle Page, G.C.M.G., M.B., Ch.M., Australian Minister of Commerce, has been appointed by his Government to come to London to establish personal Cabinet liaison between the United Kingdom Government and that of the Commonwealth.

An account of the Mental Health Report was published in the *Journal* of August 23. Copies of the report are obtainable from the Secretary of the Association, B.M.A. House, Tavistock Square, W.C.1, at the price of 6d.

A special luncheon in celebration of the twenty-first anniversary of the foundation of the Tavistock Clinic will be held on Monday, September 29, at Grosvenor House, Park Lane, at 12.30 for 1 p.m., under the patronage of H.R.H. the Duke of Kent. The wartime address of the clinic is Westfield College, Kidderpore Avenue, Hampstead, N.W.3.

The Council of Epsom College will shortly award St. Anne's Scholarships to girls attending Church of England schools. Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. The Conjoint Committee will in November next award a "Challice" annuity of £32 per annum to a duly qualified medical man who, on account of old age, has been compelled to retire and who is in need. Forms of application for the scholarships and pension can be had from the Secretary's Office, Epsom College, Surrey, and must be returned by October 14.

The twentieth annual lecture conference arranged by the Industrial Welfare Society was held during last week-end at Reading University. It was attended by some 250 welfare supervisors, employment managers, personnel managers, and directors of firms, and these delegates were received by the director of the society, Mr. R. R. Hyde, who read a message from the King: "It is gratifying to me as your Patron to observe in the many factories which I visit that the principles for which the society has stood since its inception in 1918 are now being so widely accepted." Among the lectures given on September 6 was one by Mr. D. C. Norris, F.R.C.S., chief medical officer, Metropolitan Water Board, on "War Production and the Health of the Worker," and another by Colonel J. R. Rees, medical director, Tavistock Clinic, on "War and the Worker: Some Psychological Aspects."

The *Anglo-Soviet Journal* will no doubt have a much larger circulation now than before the Nazi invasion of Russia. It is a well-illustrated quarterly, owned by the Society for Cultural Relations, edited by Dr. Geoffrey Vevers, and published by Lindsay Drummond, Ltd., 6, Buckingham Street, W.C.2, at 2s. a copy. The July issue (being No. 3 of Volume II) contains articles of topical interest, including one by Mr. Ruscoe Clarke on "Medical Theory in the Soviet Union." There are also some medical items in the miscellany headed Notes and News.

The Consultative Committee for the Director of Water Examination, Metropolitan Water Board, which is referred to in a leading article in this week's *Journal*, has the following composition under the chairmanship of Lord Horder: Dr. James Ferguson, Dr. Mervyn Gordon, F.R.S., Dr. Thomas Orr, Lieut.-Colonel G. S. Parkinson, Dr. Maitland Radford.

A Defence Regulation is to be issued immediately, the terms of which are: (1) This Order may be cited as the Paraffin Emulsion (Reduction of Liquid Paraffin) Order, 1941, and shall come into operation on the day of . 194 : (2) on and after the date of operation of the Order no paraffin emulsion shall be manufactured containing more than 25% volume in volume of liquid paraffin. The reason for this Order is that while the use of liquid paraffin is essential in certain conditions it is possible to effect economy in its use. While proprietary brands of petroleum emulsions contain percentages of liquid paraffin as high as 65% by volume, the Therapeutic Requirements Committee and the National War Formulary Committee have both decided that an emulsion containing 25% of liquid paraffin is as effective as the pure oil. The National War Formulary, which is now in proof and will soon appear, includes a 25% emulsion. It will, of course, be permissible to dispose of existing stocks of emulsions containing more than 25%, but in due course the Order should effect a substantial saving in the quantity of paraffin used medicinally.

During the first two years of the war over £7,000,000 have been contributed to the Duke of Gloucester's Red Cross and St. John Fund. Lord Iliffe, chairman of the appeal committee, stated last week that the Red Cross and St. John War Organization was faced with ever-increasing commitments in all parts of the world, the outgoings of the Organization being nearly £11,000 a day. New calls were constantly being made upon the Red Cross from every front at home and abroad, and in recent weeks every service in the Middle East and Far East had been expanded and extended. Nevertheless revenue had so far progressively kept pace with expenditure.

Caldecote Hall, Nuneaton, was taken over by the Ministry of Health last year, but was later relinquished and has now resumed its normal functions.

No. 33

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 16.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941 (a)	(b)	(c)	(d)	(e)	1940 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	135	7	28	—	6	125	8	51	2	2
Deaths		—	1				1	4		
Diphtheria	699	33	182	18	32	709	28	340	35	31
Deaths	20	1	2	2	—	21	—	8	—	2
Dysentery	196	9	67		—	51	7	45		—
Deaths		1		—	—			1	—	—
Encephalitis lethargica, acute	6	—	3		—	3	—	—		—
Deaths		—					—	1		
Enteric fever*	26	2	4	6	2	168	6	22	7	1
Deaths	2	—	—	—	—	—	—	—	—	—
Erysipelas			44	8	6		12	45	1	3
Deaths							—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	51	3	9	21	2	35	5	6	10	6
Measles	1,914	78	24	83	3	8,057	45	405	—	4
Deaths	1	—	—	1	—	7	—	5	1	—
Ophthalmia neonatorum	91	5	17	—	—	95	14	17	1	—
Deaths										
Paratyphoid A and B	166	2	14	—	—					
Deaths	1	—	—	—	—					
Pneumonia, influenzal†	378	13	2	—	2	375	12	—	—	4
Deaths (from influenza)	6	16	—	—	6	6	—	—	—	1
Pneumonia, primary	—	—	126‡	9	—			121	—	
Deaths				10			14		6	4
Polio-encephalitis, acute	2	1				5	—			
Deaths										
Poliomyelitis, acute	25	1	10	2	1	36	2	4	—	—
Deaths							2	1		
Puerperal fever	1	1	11	1	—	5	5	15	—	5
Deaths		—					1			
Puerperal pyrexia	104	7	15		—	134	7	9		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	830	24	142	29	27	1,310	37	137	18	59
Deaths	2	—		—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	3,190	193	56	32	16	943	8	43	—	19
Deaths	18	4	2	2	—	3	—	1	1	3
Deaths (0–1 year)	248	18	45	45	10	248	26	41	25	25
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,610	456	530	167	108	3,926	662	509	148	121
Annual death rate per 1,000 persons living			11.5	11.1	§			10.3	9.9	10.6
Live births	5,097	406	810	355	180	5,860	956	826	300	195
Annual rate per 1,000 persons living			16.5	23.6	§			16.7	20.0	17.1
Stillbirths	173	20	37			253	27	46		
Rate per 1,000 total births (including stillborn)			44					53		

* Includes paratyphoid A and B for Eire and Northern Ireland.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes one case of pneumonia not otherwise notifiable.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

A further decline in the notifications of measles was recorded during the week, 1,914 cases being notified—a decrease of 362. A slight rise occurred in the incidence of scarlet fever, whooping-cough, and diphtheria. The notifications of these diseases exceeded those reported during the preceding week by 26, 52, and 22 respectively. In Scotland the incidence of diphtheria, measles, and whooping-cough declined, whilst scarlet fever showed an increase.

Dysentery

In striking contrast to the experience of the preceding week, when the number of cases was the lowest for several months, the notifications for the week under review showed a very large increase in England and Wales, and with a total of 196 reached a level that has only once been exceeded during the last three years. The largest of the local outbreaks were Essex (Colchester M.B.17) : Hertfordshire 60 (Berkhamsted U.D. 58) ; Yorkshire, West Riding 22 (Keighley M.B. 12) ; Pembrokeshire (Pembroke R.D. 31). The increase in notifications in Scotland was due to an outbreak in the county of Inverness, 23. This county and the city of Dundee, 20, accounted for two-thirds of the total cases in the country.

Cerebrospinal Fever

One hundred and thirty-five cases of cerebrospinal fever were notified in England and Wales during the week reviewed, an increase of 14 compared with the preceding week. The largest number of cases were from Glamorganshire 10 ; Yorkshire, West Riding, 19 ; Lancaster 30 (Liverpool C.B. 9, Manchester C.B. 6). In Scotland the incidence declined, almost half the cases being reported from Glasgow, 12.

Typhoid and Paratyphoid

Twenty-six cases of typhoid and 166 cases of paratyphoid were reported in England and Wales. The largest increase was shown by Kent, and was due to 8 cases of paratyphoid occurring in Tonbridge R.D. The outbreak of paratyphoid in Cheshire and Lancaster persists, the number of cases reported for the past six weeks being : Cheshire 63, 44, 43, 25, 6, 15 ; Lancaster 146, 179, 133, 96, 76, 71, and of these 79, 78, 73, 70, 40, 40 were reported from Liverpool C.B.

Poliomyelitis

The number of cases reported in England and Wales showed a slight reduction, but isolated cases have appeared in several counties not previously affected. The outbreaks in Berkshire and Buckinghamshire are still the most important of the local epidemics. The returns for these counties are—Berkshire : New Windsor M.B. 2, Cookham R.D. 2 ; Buckinghamshire : Slough M.B. 4, Eton R.D. 2. A third death has been reported from the outbreak in the Slough area, a brother of a boy who died of the disease a week before. The only other area with more than one case was Southampton (Basingstoke M.B. 2). Multiple cases were reported from Scotland in the counties of Fife 2, Ayr 3, and the burgh of Glasgow 3.

F. I. Seymour and A. Koerner (*J. Amer. med. Ass.*, 1941, **116**, 2747) record their observation on nearly 10,000 pregnancies obtained through artificial insemination, two-thirds of which were effected by use of the husband's semen alone. The proportion of boys to girls resulting was roughly 8 to 5 when the husband's semen was used and 7 to 5 when a donor's was used. Of the pregnancies 97% resulted in live and perfectly normal babies. The incidence of miscarriages and abortions was only one-fifth of that occurring normally in the population in areas where artificial insemination is not practised. The incidence of extra-uterine pregnancies was only one-sixth of that occurring normally. In all, 1,357 women had repeated pregnancies by artificial insemination. Successful pregnancies were reported with inseminations varying from 1 to 72.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Outbreak of Warts in a School

J. W. writes: A headmaster writes to me as a school medical inspector asking me if I can give him any help with an outbreak of verruca in a secondary school. He was advised by the M.O.H., but in spite of disinfection of the floors, etc., of the swimming baths there are always a number of cases in the school. Can any reader of the *Journal* give me any further advice on this matter as to the prevention of this trouble and as to any recent literature?

Recurrent Erysipelas

E. C. A. asks if any reader can suggest treatment for preventing erysipelas. Patient is a schoolmistress aged 45. She once suffered from tuberculosis of lungs—now quiescent. She has very crimson cheeks, and the erysipelas superimposes itself on the coloration of the left cheek, which becomes hard, raised, painful, and with a spreading irregular edge. The temperature is 100-101°, but never above. The attacks, which have been three in number, have occurred at eight-weekly intervals. Sulphanilamide in adequate dosage has been started on the first day and the condition speedily arrested on all occasions, but the patient feels very exhausted and weak afterwards. She has been in rather poor health lately with menopausal symptoms.

LETTERS, NOTES, ETC.

Wanted—A Microscope

Lord EBBISHAM, G.B.E., chairman of the Comforts-Collections Committee, writes from the headquarters of the War Organization of the British Red Cross Society and the Order of St. John of Jerusalem: We have an R.A.F. Hospital on the Gold Coast, West Africa, and the medical officer in charge writes to say that there is a most urgent necessity for a second-hand microscope for malaria blood tests. The one they have is not sufficient for the number of cases requiring treatment. The microscope should have a good 1/12-in. objective lens, a 1/12-in. objective movable stage, and a substage condenser. These instruments are impossible to obtain new, so I appeal to any reader who has one which is not in use to send it to me at 54, Victoria Street, S.W.1, to forward to the Gold Coast. It may be the means of saving many valuable lives.

Health Education Material

The Central Council for Health Education (Tavistock House, Tavistock Square, W.C.1) is constantly preparing new material giving well-authenticated advice to the general public on various subjects connected with healthy living. The following are some of the subjects on which booklets or leaflets have been compiled during the last few months: typhoid, tuberculosis, diphtheria, measles, influenza, scabies and impetigo, lice, bugs, food and sanitation in wartime, purifying drinking-water in wartime, health in the shelter, coughing and sneezing, health in the black-out, the health of mother and child, ration dinners, health for A.R.P. workers. Further leaflets are in preparation on flies, whooping-cough, and rheumatism respectively, and three new leaflets have been published. One on diphtheria immunization is a reproduction of a recent broadcast by Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health, in which he puts the whole case for diphtheria immunization in a few simple and telling words. The other two are leaflets on the importance of sleep for children; the first is intended for the use of parents, and the second has been composed to appeal to children direct. It might well serve as the basis for a school lesson, after which the teacher could allow the children to take the leaflets home to re-enforce the advice given. The Central Council is an association not formed for profit, and all its publications are isued at a price covering production costs only. Material is available on request at economic rates, in either large or small quantities, to local authorities, welfare officers of industrial concerns, voluntary organizations, and the general public.

Deaths on the Table

"G.P." writes: The avoidance of this terrible tragedy is ably summed up in the last paragraph of Dr. L. S. Woolf's letter (August 23, p. 282). There is another point, and I speak from twenty-two years' experience as a general practitioner, not as a professional anaesthetist. It is the personal factor. By this is meant that confidence of the patient in the person anaesthetizing is the major point in safety. It would be interesting to know how many "deaths on the table" have occurred when the general practitioner has given the anaesthetic to his own patient. I had a sad example of this a few years ago. I gave a patient (and friend) of mine, a man aged 46, a general anaesthetic for dissection of tonsils, and there was never a moment's anxiety. Three years later he was having another operation, and the surgeon said he wished his own anaesthetist to give the anaesthetic. Almost the last words the patient said to his wife before the operation were that he wished his own doctor was giving the anaesthetic instead of a stranger. The patient died on the table just as the surgeon was making his initial incision. I must naturally remain anonymous.

Ligature of Varicose Veins

Mr. DOUGLAS ROBB (Auckland, New Zealand), commenting on the article by H. S. Russell on subcutaneous ligature of varicose veins (April 26, p. 626) considers that the procedure described is open to the following criticisms. (1) A blind pouch of internal saphenous is left between termination and site of ligature; this may harbour a loose clot, and risk of embolism even under ambulatory conditions is not negligible. (2) This segment contains the leaking valve, and is exposed to pathological venous pressure. (3) The three main tributaries—to say nothing of the trunk itself, which is not severed in continuity—entering the segments are untouched, and especially under the condition mentioned in (2) are potential and actual routes for anastomosis and re-establishment of the downward current. For these reasons he prefers an exposure of the termination of the internal saphenous vein, ligature flush with the deep femoral, and ligature and division of all tributaries entering the terminal one to two inches. This can be done with local anaesthesia, using a small one-inch incision parallel with Poupart's ligament. Mr. Robb usually has patients in hospital for only twenty-four hours, and makes them walk round on the evening of the operation and each day afterwards. Injections are begun at the same time as the operation and continued as convenient. He does not think that this procedure should be done on an out-patient, nor that any fully effective operation can be carried out less inconveniently. Sometimes in older patients or bilateral cases two or three days in hospital are required.

Adrenal Graft for Addison's Disease

Mr. DOUGLAS ROBB, commenting on the statement made by Drs. Katz and Mainzer (April 26, p. 618) that the "insignificant surgical procedure of grafting endangers the patient's life," writes: The following brief notes of an experience bearing this out may be of interest. A married woman of 30 presenting the classical picture of Addison's disease was referred to me for adrenal grafting by Dr. J. E. Caughey. The operation was done under light ether anaesthesia, and the grafts embedded into the lower part of the right rectus abdominis and into the subcutaneous fat exposed by the same incision. The grafts were taken from both suprarenal glands of a stillborn full-time male foetus. The embedding was done two hours after the child's birth, but intra-uterine death was believed to have occurred twelve to twenty-four hours previously. On the evening of the same day as the operation a menstrual period appeared for the first time for more than a year. The next morning the patient sat up to take breakfast and died instantly without warning, struggle, or distress. A post-mortem examination was not obtained.

Colds in Air-raid Shelters

Dr. A. G. BADENOCH (Garelochhead) writes: So much success has attended the administration of the following remedy in cases of respiratory catarrh, even where the time-honoured expectorants have failed, that I have been advised to make it more widely known through your columns. One calls it "mist. laryngitis," but that title by no means delimits its scope. It is useful at all stages of a "cold," perhaps especially prophylactically and at the onset.

R	Tr. ferri perchlor.	℥vijss
	Tr. opii camph.	℥xv
	Glycerini	℥xv
	Aq. .. .. ad	℥ss

Sig.: To be gargled and swallowed, without water, after meals and at bedtime.

A useful addition in bronchial cases is syr. tolutani, ℥xx to xxx. In tonsillitis, potassium chlorate is not incompatible.